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**Battle Mountain District Drought
Management
ENVIRONMENTAL ASSESSMENT**

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BATTLE MOUNTAIN DISTRICT DROUGHT MANAGEMENT ENVIRONMENTAL ASSESSMENT DOI-BLM-NV-B000-2012-0005-EA

I. INTRODUCTION/PURPOSE AND NEED FOR ACTION

1.0 Introduction

The Bureau of Land Management (BLM) Battle Mountain District (BMD) has prepared this Environmental Assessment (EA) to address potential environmental consequences associated with livestock and wild horse and burro management actions carried out during drought. The BMD manages approximately 10.5 million acres of public land within Lander, Eureka, Esmeralda and Nye Counties in Nevada, which is administered in two field offices, the Mount Lewis Field Office (MLFO) and the Tonopah Field Office (TFO) (see Map 1). The BMD also administers nine grazing allotments for the Winnemucca, Elko and Ely BLM Districts.

The BMD is located within the Central Basin and Range and Mojave Basin and Range ecoregions defined by the Western Ecology Division of the United States Environmental Protection Agency (see Map 2). Drought is considered a recurring event within both ecoregions.

This EA analyzes a range of management alternatives that may be implemented to mitigate the effects of drought and to address emergency situations. Emergency situations include but are not limited to wild horse and burro starvation, water deprivation and death, major soil erosion events, rangeland degradation, livestock starvation due to lack of forage, etc.

1.1 Purpose and Need

The purpose of the EA is to analyze alternatives that would allow for the rapid response to drought in order to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought.

Drought has been defined by the Society of Range Management as, “(1) A prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall. (2) A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water.” (Bedell 1998).

The effects of drought are often times far reaching, impacting the environment and economy of an area. This EA will focus primarily on the environmental impacts of drought. Specific impacts depend on drought severity but often include:

- Increased number and severity of fires
- Lack of forage and drinking water
- Decreased vigor and production of plants
- Damage to plant species
- Increased wind and water erosion of soils
- Reduction and degradation of fish and wildlife habitat
- Increased death loss of wildlife, wild horses and burros and livestock

Drought is a recurring, albeit unpredictable, environmental feature which must be included in planning (Thurow and Taylor 1999). The degree to which drought impairs the range depends on the intensity, frequency and timing of grazing (Howery 1999). A Drought Management Plan does not currently exist for the BMD. Therefore, the need for the action is to ensure that livestock and wild horse and burro management during drought does not adversely impact the range and compromise the BMD's ability to meet the fundamentals of rangeland health as mandated by the Land Use Plans and Policies brought forward in sections C and D of this document by accomplishing the following drought management goals:

1. Provide for the early detection of and response to drought conditions.
Promptly identify and prevent further degradation to affected resources on lands affected by drought within the BMD.
2. Provide for the rapid implementation of Drought Response Actions in order to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought.

1.2 Conformance with Land Use Plans and Other Plans

The Proposed Action and Alternatives described below are in conformance with the following plans:

- Shoshone-Eureka Resource Management Plan (RMP) Record of Decision (ROD), 1986;
- Shoshone-Eureka RMP Amendment ROD, 1987;
- Shoshone-Eureka Rangeland Program Summary, 1988;
- Sonoma-Gerlach Management Framework Plan III, 1982;
- Sonoma-Gerlach Rangeland Program Summary, 1992;
- Northeastern Great Basin Resource Advisory Council (RAC) Standards and Guidelines;
- Sierra Front-Northwestern Great Basin RAC Standards and Guidelines, 1997, as amended;
- Tonopah Resource Management Plan, 1997 and,
- Mojave-Southern Great Basin (RAC) Standards and Guidelines, 2006 as amended.

1.3 Relationship to Statutes, Regulations, Policy or other Environmental Analysis

The Proposed Action and Alternatives would be in conformance, to the maximum extent possible, with the following Federal, BLM regulations:

- Taylor Grazing Act of 1934
- National Environmental Policy Act of 1969 (NEPA)
- National Historic Preservation Act of 1966, as Amended (NHPA)
- Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA)
- Endangered Species Act of 1973
- Federal Land Policy and Management Act of 1976 (FLPMA)
- Public Rangelands Improvement Act of 1978
- Wilderness Act of 1964
- 43 CFR §§4100 and 4700

1.4 Additional Guidance

Guidance on the development and implementation of responsive management actions when it is anticipated or evident that temporary measures are necessary to protect public land resources due to the impacts of drought are found in the BLM Nevada Handbook NV H-1730-1 Resource Management during Drought.

II. DESCRIPTION OF THE PROPOSED ACTION & ALTERNATIVES

2.0 Proposed Action

The Proposed Action is to implement, either separately or in combination, Drought Response Actions (DRAs) identified below and described in the Drought Management Plan (DMP) (Attachment 2) during drought. The Drought Detection and Monitoring Plan (DDMP) (Attachment 1) would be used to facilitate the early detection and monitoring of drought conditions.

DRAs are designed to reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The early detection and prompt response to drought is aimed at preventing further degradation to affected resources within the BMD. DRAs would be implemented within all appropriate laws, regulations and policies.

The implementation of DRAs would be activated by the drought indicators and drought response triggers identified below and described in Attachment 2:

A. Drought Indicators

Drought indicators are any single observation or a combination of observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the BMD would use to determine the onset and/or continuation of a drought.

A two-part drought definition was provided within the purpose and need for the Proposed Action section of this document (page 1). The first part of the definition describes drought as, “a prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall.” Tracking weather conditions provides an early indication of drought. The U.S. Drought Monitor (<http://droughtmonitor.unl.edu/>) would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and Herd Management Areas (HMAs) within drought-afflicted areas would be used to evaluate the current condition of water resources and determine if water shortages exist.

Part two of the drought definition describes drought as, “A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water”. The U.S. Drought Monitor and the Vegetation Drought Response Index (VegDRI) (<http://vegdiri.unl.edu/>) would be consulted to determine drought afflicted areas and vegetation condition as it pertains to drought stress. Site visits to allotments and HMAs within drought-

afflicted areas would be used to evaluate the current condition and production of key forage species as described in the associated Ecological Site Descriptions (ESDs) for the area. Evaluations would be used to determine if plants are exhibiting signs of drought stress and if forage shortages exist. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence (i.e., premature aging) and plant death.

B. Drought Response Triggers

Drought Response Triggers (Triggers) are thresholds associated with forage and water resources that indicate the need for site-specific drought response. Triggers would be used separately or in combination to activate DRAs. These Triggers have been placed into two categories: water and forage. The following is a list of the triggers for both categories, a more detailed description of the triggers is included in Attachment 1:

1. Water

This Trigger is based on the presence or absence of available water. Field visits would be conducted in drought-afflicted areas to determine if there are adequate water sources (natural and/or developed) to provide for the management and/or distribution of wildlife, wild horses and burros and livestock while maintaining riparian area functionality or the health of upland areas surrounding developed water sources (e.g., wells, pipelines, guzzlers, etc.).

Water would be classified as “available” or “unavailable” within areas affected by drought. “Available” is defined as an amount of water sufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values associated with the riparian areas and/or areas surrounding the water source. Resource values associated with riparian areas include riparian vegetation, bank stability, wildlife habitat and water quality. Resource values associated with upland areas surrounding water sources (e.g., wells, pipelines, etc.) include vegetation, nutrient cycling, soil site stability, hydrologic function and wildlife habitat.

“Unavailable” is defined as an absence of water or an amount of water that is insufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values.

Field observations and professional judgment would be used to determine availability. Criteria such as reduced quantity, noticeable accumulation of animal waste, and unsafe conditions due to mud or severely eroded banks would be used.

2. Forage

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). A lack of available soil moisture usually reduces the length of the growing season. A shorter growing season directly impacts above and below ground production and ultimately forage quantity and rangeland health. The degree to which drought impairs the

range's potential for future forage production depends on the intensity, frequency, and timing of grazing (Howery 1999).

The following drought response triggers associated with forage are aimed at ensuring proper utilization levels of upland and riparian key species, as described in the ESD associated with the site. Appropriate utilization levels provide adequate residual matter for the maintenance of plant and rangeland health especially during a drought. The triggers have been organized into three categories; utilization and stubble height triggers by vegetation community, livestock distribution, and plant production/drought stress.

Utilization and Stubble Height

Utilization triggers were developed using the utilization guidelines proved by Holechek et al. (1988). The guidelines provide a range of use associated with rangeland condition. For the purpose of grazing management during times of drought, the BLM has chosen to limit utilization of key species to the lower utilization level. The lower utilization levels are consistent with those suggested for ranges in poor condition. These were chosen due to the reduced vigor and production of range forage plants resulting from drought. The following utilization levels would function as drought response triggers within each respective vegetation community and would trigger the implementation of DRAs. Stubble height triggers were developed to ensure adequate residual matter remains to maintain riparian plant communities. Generally, stubble heights of 4 to 6 inches provide effective stream bank protection, prevent sedimentation, and maintain or improve plant communities (USDI 1999-2001). Key species would be identified using the ESD for a specific area.

- **Salt Desert Shrub**
 - o 25 % utilization of key species.
- **Sagebrush Grassland**
 - o 30% utilization of key species.
- **Pinyon-Juniper Woodland**
 - o 30% utilization of key species.
- **Mountain Shrub**
 - o 30% Utilization of key species.
- **Riparian Zones**
 - o Four inch stubble height of key riparian species.

Livestock\Wild Horse and Burro Distribution

A pattern of use or distribution of livestock and/or wild horses and burros resulting in a concentration of animals, which contributes to grazing in excess of the aforementioned utilization levels and/or stubble heights, would trigger DRAs to improve animal distribution and prevent further rangeland degradation.

Plant Production and/or Drought Stress

The following plant production and/or drought stress indicators would trigger DRAs:

- Drought induced senescence or reduced production of key upland and/or riparian species which results in an insufficient quantity of forage for wildlife, wild horses and burros, and livestock;
- Drought induced senescence of key riparian herbaceous species which results in insufficient plant growth/height to provide for stubble heights equal to or greater than four inches within riparian areas; and
- Noticeable signs of drought stress which impede the ability of key species to complete their life cycle (e.g., drought induced senescence, reduced seed head development, etc.).

C. Drought Response Actions

The following DRAs would be implemented either separately or in combination upon reaching the criteria described under the Drought Response Triggers section. A more in depth discussion of each action can be found in Attachment 2. DRAs have been placed in two categories: livestock and wild horses and burros. These have been separated due to the differing nature and capabilities for management of livestock and wild horses and burros.

1. Livestock

The following is a list of DRAs that would be used either separately or in combination to reduce the impacts of authorized livestock grazing on natural resources during drought.

Partial or complete closure of an allotment(s)

During drought, the forage resources and overall condition of affected allotments would be assessed. Portions of an allotment(s) that lack forage and/or water, are in poor condition, or are identified as critical areas to provide forage and/or water for wildlife and/or wild horses and burros could be closed to livestock grazing for the duration of the drought. Partial closures would be accomplished by employing a combination of the other DRAs such as temporary fencing, temporary water hauls, active livestock herding, strategic supplementation etc. If it is determined that aforementioned conditions exist over the entire allotment(s), complete closure would occur. Closures would be in effect for the duration of the drought plus one growing season following the cessation of the drought to allow for recovery.

Partial Reduction in Animal Unit Months (AUMs)

During drought, a reduction in livestock numbers could be necessary to ensure that adequate forage is available to meet wild horses and burros and livestock requirements. Reduced livestock grazing would prevent overutilization of key forage species and prevent further adverse impacts to rangeland resources that are already affected by drought.

Change in season of use

A change in the season of use could reduce livestock grazing related impacts during drought. The following modifications could be used either separately or in combination:

- Changing the season of use to a time following the critical growth period (actual dates will vary with vegetation community type) of key forage species (ESDs correlated specific locations will be consulted to determine key species). This would allow plants to utilize available soil moisture and any additional moisture received during the critical growth period. Plants would be able to complete their life cycle thus allowing for seed dissemination and root growth and replacement. Plants could then be grazed after sufficient growth or dormancy occurs. Repeated grazing during the critical growth period does not allow plants to regrow before soil moisture is depleted; therefore, plants may not have adequate resource reserves to survive winter dormancy.
- Defer livestock grazing in riparian areas during the hot season (approximately July 1 through September 30) to avoid the degradation of riparian areas during drought.

Reduced grazing duration

Moving livestock across an allotment or pasture more quickly would increase the amount of rest individual plants are given. Reducing grazing duration would increase a plant's ability to utilize available resources to regrow foliage, store carbohydrates reserves, and maintain vigor. Plants are unable to regrow if grazed repeatedly especially during times of limited soil moisture. Periods of deferment should be varied according to the rate of growth. Range plants initiate growth from meristems (i.e., growing points), once meristems are removed, plants must grow from basal buds which requires much more of the plants energy than regrowth from meristems. Plants that are continually forced to regrow from buds may reduce or even eliminate the production of new buds, which may reduce production in subsequent years (Howery 1999). During stress periods such as drought, growth slows and plants should be rested longer (Hanselka and White 1986). Reducing the duration of grazing would provide plants more time to recover after grazing pressure is removed.

Change in livestock management practices

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and periods of below average precipitation compound the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). Modification of grazing practices would improve livestock distribution. The following methods/tools could be used either separately or in combination to improve livestock distribution:

- Strategic placement of salt and/or mineral supplements away from water and in areas that were un-grazed or lightly grazed in previous years.
- Increased herding of livestock to previously un-grazed or lightly grazed areas.
- Concentrating livestock into a single herd in order to increase control and encourage uniform grazing. This would force livestock to utilize more of the less-preferred plants while limiting repetitive or selective grazing of preferred forage species. Herd sizes would be dependent on water availability; therefore, adequate water sources must be present to provide water to wildlife, wild horses and burros and livestock while

maintaining riparian functionality. Use would not exceed utilization and stubble heights identified in the Drought Response Triggers section of this document.

Temporary fencing of critical areas

During drought, temporary electric fencing could be used to exclude livestock from critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat etc. Temporary electric fences may also be used to confine livestock to areas dominated by invasive annual species. Temporary electric fences would be constructed using ¾ inch to 1 inch diameter fiberglass fence posts and two strands of electric fence polywire. The height of the fence would be 30 inches (Hot wire) with the bottom wire being 20 inches (ground wire) above the ground. Signs warning of electric fence would be firmly attached to the fence at common crossing points and at ¼ mile intervals along the fence.

Targeted grazing of monotypic invasive annual communities

Targeted grazing of monotypic invasive annual communities (e.g., cheatgrass) could be used to alleviate grazing pressure on other areas that are dominated by native species. On these sites, prescribed livestock grazing could be applied to achieve maximum damage to annual grasses with little concern for non-target plants (Peischel and Henry 2006). Grazing would be focused during the spring and/or fall months to take advantage of early spring and fall growth of the annuals. Livestock would be removed upon reaching a two-inch average stubble height in order to provide some protection from wind and water erosion. Animals would be confined to these areas using temporary electric fence or herding. If an existing water source is not available, the use of temporary water hauls or temporary above ground pipelines may be used.

Temporary change in kind or class of livestock

According to Volesky et al. (1980), yearling cattle utilize pastures more uniformly over variable terrain than cows with calves or mixed classes. Cows and calves utilize forages nearest the water much more heavily than do yearlings. Therefore, selecting yearlings would improve grazing distribution and limit impacts to riparian areas.

Choosing a different kind of livestock could also affect how a range can be utilized. With their large mouths, cattle and horses may not select annual grasses as readily as sheep or goats because livestock prefer plants they can eat quickly and efficiently. Sheep or goats can get a full bite of annual grasses more easily than cattle or horses, especially when annual grass plants are small (Peischel and Henry 2006). Additionally, sheep and goats can be herded more effectively which allows for greater control and provides an opportunity to limit impacts to critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat, etc.

Temporary water hauls

Temporary water hauls could be used in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Additionally, the BLM could authorize the use of temporary water hauls to augment existing water sources. Whenever possible, water haul sites would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and bird ramps would be installed in water troughs to protect avian species. All temporary water hauls must be authorized in writing and would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

Temporary above ground pipelines

Temporary above ground pipelines could be implemented in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Whenever possible, temporary pipelines would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Temporary pipelines would consist of an above ground pipeline, which would transport water from the end point of an existing pipeline to livestock water troughs of various size and material, placed on public lands and fitted with a float valve to prevent overflow and saturated soil conditions around the trough(s). Saturated soils are at a greater risk for compaction or erosion. Any temporary above ground pipelines would require approval from the Nevada Division of Water Resources. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and no new ground disturbance associated with the installation of a temporary pipeline(s) would be authorized. Bird ramps would be installed in water troughs to protect avian species. All temporary above ground pipelines must be authorized in writing and would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

2. Wild Horses and Burros

The following is a list of DRAs that would be used either separately or in combination to ensure the welfare of wild horses and burros on public lands administered by the BLM. Wild horses and burros could be at risk of dehydration or starvation due to drought conditions, special considerations are needed for the management of wild horses and burros during drought. These DRAs would help reduce the impacts of wild horses and burros on natural resources adversely affected by drought while ensuring their welfare.

Temporary Water Hauls

In circumstances where it is determined that adequate forage exists to maintain the existing population of wild horses and/or burros, but water resources are deficient due to drought conditions, the BLM could employ temporary water hauls to augment existing water sources. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Water haul locations would be determined based on animal population density and distribution, and placed in previously disturbed areas such as gravel pits or roadsides. Troughs could be placed at the existing water sources that are either dry or inadequate to maintain healthy animals. The use of water hauls would continue until the existing waters are able to support the population or a drought gather occurs. All areas would be surveyed for cultural resources prior to implementation and bird ramps would be installed in water troughs to protect avian species.

Wild horse and burro removal

When it is determined that drought conditions have resulted in insufficient amounts of forage and/or water to support the existing population of wild horses and/or burros within a herd management area (HMA) a drought gather would be conducted. Wild horses and burros would be removed from the range in order to prevent suffering and death due to drought conditions on the range and prevent further degradation of resources affected by drought. Gathers would be completed by removing varying numbers and using the following methods, either separate or in combination (refer to attachment 2 for a more detailed discussion):

a. Helicopter capture

The helicopter-drive trapping method would be the primary gather technique. The use of roping from horseback could also be used when necessary. Multiple gather sites (traps) could be used to gather wild horses and/or burros from within and/or outside the HMA boundaries.

b. Bait or water trapping

Where appropriate, the BLM could employ bait and/or water trapping in order to capture wild horses or burros that need to be removed from the range in response to drought.

Bait and water trapping involves the construction of small pens, and baiting animals into the pens with the use of hay, water or other supplements. Specialized one-way gates are often used to prevent the animals from leaving the trap once inside. Bait and water trapping methods are

usually only effective in areas where water or forage is absent, resulting in high motivation for animals to enter the trap to access them. These situations may occur during drought emergencies or severe winters. Typically, small groups of animals enter the traps at a time. This requires many days too many weeks to remove a substantial number of animals from an area. This option could be employed where small numbers of animals need to be removed, where it is deemed that the geography and resources of the HMA would ensure success, or in combination with helicopter gathers.

c. Removal numbers

Removal numbers would be based on the assessment of forage, climate, water, rangeland health and the use of the range by wild horses or burros. Removal numbers would be identified to ensure that healthy animals remain on the range and have adequate resources for survival, and that rangeland degradation is minimized in order to allow for post drought recovery. The long term health and welfare of the wild horses and burros would be the overarching goal of a drought gather. The removal numbers would be determined on an HMA by HMA basis. A summary of the data, and rationale for the removal numbers would be documented in the Decision issued prior to a gather commencing.

1. Removal of sufficient numbers of animals to achieve the low range of AML

Where the assessment of forage and water indicates that some relief is needed through removal of excess wild horses and/or burros, a gather could be conducted to achieve the established low range of AML. This would occur where the current population exceeds the low AML, and adequate resources do not exist to maintain healthy wild horses or burros at the current population level. This option could be implemented in combination with temporary water hauls.

2. Removal of sufficient animals to achieve the high AML

This situation would apply when the population is in excess of the high AML, and assessment of existing forage and water resources warrants limited removal of wild horses and/or burros to the high AML. This would also be implemented to restrict the number of animals removed due to constraints on holding space and long term holding costs. This option could be implemented in combination with temporary water hauls.

3. Removal of animals to a point below the low AML

During a prolonged drought, forage and water resources could become severely limited to a point that wild horses and/or burros must be removed below the low range of AML in order to prevent widespread suffering and death. The post gather population target would be determined based on the existence and reliability of remaining resources. This option would be implemented in order to prevent subsequent emergency conditions due to ongoing or worsening drought conditions. This option could be implemented in combination with temporary water hauls.

4. Complete removal of all animals in an HMA

In extreme situations, the complete lack of forage and/or water in certain locations could warrant the removal of all locatable wild horses and burros to prevent their death. This situation would only apply as a last resort, and could involve holding wild horses or burros in contract facilities with release back to the range when adequate resources exist. If complete removal and subsequent release is chosen, population control methods could be implemented prior to wild horses being released back to the HMA. Population controls would not be implemented in burro populations.

Population controls applied to wild horses released back to the range would be used to slow population growth rates, lengthen the time before another gather is necessary and enhance post drought resource recovery. Population controls include the application of fertility control vaccine to mares, and sex ratio modification to favor studs. Fertility control vaccines would be applied to all mares released to the range. Sex ratio adjustments could be applied alone or in combination with fertility control. Sex ratio adjustments would involve the release of studs and mares in a 60:40 ratio (favoring studs). In extreme cases, where it is determined that fewer mares should be released to provide for animal welfare and the health of mares, fewer mares could be released resulting in sex ratios of 70:30. This would occur when large numbers of animals need to be removed from the range due to resource conditions and releasing additional studs would result in fewer horses needing to be removed from the range.

d. Type of removals

Under normal gather operations, all located wild horses are captured. The desired number of horses for release and removal are then identified through a “selective removal” process. For drought related gathers gate cut removals would be implemented. Gate cut removals would be used to limit any additional stress on the wild horses and burros within a defined gather area. In this situation, wild horses or burros would be gathered and removed regardless of age to reach the post gather target. No animals would be returned to the range and no population controls would be implemented. The post gather target number of animals would remain undisturbed on the range. Gathers would be designed to remove animals from the areas most affected by drought and resource deficits. Gathers of burros are typically Gate Cut gathers.

2.1 Grazing Closure Alternative

Under the Grazing Closure Alternative, all areas determined to be affected by drought (refer to Attachment 1) would be closed to livestock grazing for the duration of the drought and one additional growing season following the cessation of the drought. Grazing closures would remove livestock grazing from the public lands to eliminate the impacts of grazing during drought and provide one growing season of rest for plant recovery following the cessation of the drought.

2.2 No Action Alternative

Under the No Action Alternative, management responses to drought would require the preparation of individual, situation specific EAs for areas or circumstances across the BMD. This would increase response times and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management actions would continue with no modifications and would be poorly suited to times of below average precipitation. During drought, livestock and wild horse and burro use would be concentrated around remaining water sources and riparian areas. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse and burro use. If drought conditions persist for long periods of time the amount of forage and water for wild horses and burros would become limited. If actions are not taken, emergency conditions could develop and may lead to a reduction in wild horse and burro health. Under the No Action Alternative wild horse and burro gather operations would need to be scheduled according to National and State priorities. This would delay response times and drought affected HMAs would not be gathered in a prompt manner.

2.3 Alternatives Considered, but Eliminated from Detailed Analysis

Supplemental Feeding of Livestock and Wild Horses and Burros

The BLM considered a Supplemental Feeding Alternative if drought conditions create insufficient forage to meet wild horse and burro and livestock needs; however, this Alternative was eliminated from detailed analysis because it would be inconsistent with 43 CFR 4700.0-6 (a) which states that, “Wild horse and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.” The WFRHBA requires the BLM to manage horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance (TNEB) on public lands (16 USC §1333(a)).

BLM Handbook H-4700-1 Wild horses and Burros Management Handbook, states that, “To achieve TNEB on the public lands, WH&B should be managed in a manner that assures significant progress is made toward achieving the Land Health Standards for upland vegetation and riparian plant communities, watershed function, and habitat quality for animal populations, as well as other site-specific or landscape-level objectives, including those necessary to protect and manage Threatened, Endangered, and Sensitive Species (TES). WH&B herd health is promoted by achieving and maintaining TNEB.”

Supplemental feeding livestock or wild horses and burros on rangelands during times of drought would adversely affect areas on or near the location that feed is being supplied. Supplemental feed could contain weed seed, which could lead to the introduction of invasive and/or noxious weeds. Providing supplemental feed would concentrate animals, thereby, increasing utilization and trampling of native species; cause soil compaction in affected area(s); increase soil erosion and adversely affect water sources due increased sedimentation due to soil erosion.

Additionally, providing supplemental feed to wild horses and burros and livestock could lead to a myriad of safety and health-related impacts to the animals. For example, providing hay in areas without adequate water could lead to colic in horses and providing nutrient rich feed to cattle following low-quality feed could lead to bloat. Furthermore, supplying supplemental feed would be cost prohibitive and unsustainable due to the inability to predict when the cessation of a drought would occur.

III. AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

3.0 General Setting

The general setting of the project area is the administrative boundary of the BMD and nine allotments administered for the Winnemucca, Elko and Ely BLM Districts. The BMD is located in central Nevada. The northern portion of the district is administered by the MLFO and is characteristic of a cooler, semi-arid Great Basin Desert ecotype. The southern portion administered by the TFO and has characteristics of the Great Basin, Great Basin/Mojave transition and Mojave Desert ecotypes. The Mojave Desert is a hotter, more arid ecotype restricted to a small area near the southern administrative boundary of the TFO.

The BMD is generally characterized as, “Basin and Range” topography with broad bedrock pediments and fault block mountain ranges predominantly running in a north-south orientation separating vast, flat playa sinks or alluvial valley bottoms. Valley and playa elevations range from 4,000-5,000 ft. with an average annual precipitation of 2-9 inches. Mountain range elevations extend from 7,500-9,500 ft. with 10-20 inches of annual precipitation.

3.1 Supplemental Authorities of the Human Environment

To comply with the NEPA, the BLM is required to address specific elements of the environment that are subject to requirements specified in statute or regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). The following table outlines the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action or No Action Alternative affects those elements.

Table 1: Supplemental Authorities

Supplemental Authority ¹	Not Present ²	Present/Not Affected ²	Present/May be Affected ³	Rationale
Air Quality			X	See discussion in Section E1.
Area of Critical Environmental Concern (ACEC)	X			No Federally designated ACECs exist within the BMD

¹ See H-1790-1 (January 2008) Supplemental Authorities to be Considered.

² Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document.

³ Supplemental Authorities determined to be present/May be Affected must be carried forward for analysis in the document.

Supplemental Authority¹	Not Present²	Present/Not Affected²	Present/May be Affected³	Rationale
Bald and Golden Eagles			X	See discussion in Section E2.
Cultural/Historical			X	See discussion in Section E3.
Environmental Justice	X			The Proposed Action or Alternatives would not disproportionately impact any low income or minority populations as described in the Environmental Justice Executive Order (EO 12898).
Farmlands Prime or Unique	X			No Federally designated farmlands, prime or unique, exist within the BMD.
Floodplains		X		The Proposed Action or Alternatives do not meet the definition of “Actions Affecting or Affected by Floodplains or Wetlands” as described in 44 CFR Ch. 1§ 9.4.
Forests and Rangelands (Healthy Forest Restoration Act [HFRA] only)	X			This element applies only to HFRA projects; no forest fuels reduction projects are analyzed within this EA.
Human Health and Safety (Herbicide Projects)	X			No herbicides would be utilized, stored, or encountered by implementing the Proposed Action or Alternatives contained in this EA.
Migratory Birds			X	See discussion in Section E2.
Native American Religious Concerns			X	See discussion in Section E4.
Noxious Weeds/Invasive Non-native Species			X	See discussion in Section E5.
Riparian/Wetlands			X	See discussion in Section E6.

Supplemental Authority ¹		Not Present ²	Present/Not Affected ²	Present/May be Affected ³	Rationale
Threatened and Endangered Species	Animals			X	See discussion in Section E2.
	Plants			X	See discussion in Section E13.
Waste Hazardous/Solid –		X			No wastes, hazardous or solid, would be utilized, stored, or encountered by implementing the Proposed Action or Alternatives contained in this EA.
Water Quality				X	See discussion in Section E7.
Wild & Scenic Rivers		X			No Federally designated wild and scenic rivers exist within the BMD.
Wilderness				X	See discussion in Section E15.

Elements Not Present/Not Affected:

The following critical elements of the human environment are not present or would not be affected by the Proposed Action or Alternatives in this EA:

- ACECs
- Environmental Justice
- Flood Plains
- Prime or Unique Farmlands
- Wastes, Hazardous or Solids
- Wild & Scenic Rivers

3.2 Other Resources

Other resources of the human environment that have been considered for this environmental assessment (EA) are listed in the table below. Elements that may be affected are further described in the EA. Rationale for those elements that would not be affected by the Proposed Action and Alternative is listed in the table below.

Table 2: Other Resources

Other Resources	Not Present ⁴	Present/Not Affected ⁴	Present/May be Affected	Rationale
Grazing Management			X	See discussion in Section E8.
Land Use Authorization			X	See discussion in Section E9.

Other Resources		Not Present ⁴	Present/Not Affected ⁴	Present/May be Affected	Rationale
Minerals			X		Mineral resources exist on the BMD; however, no major soil disturbing activities would occur under the Proposed Action or Alternatives. Therefore, mineral resources would not be impacted.
Paleontological Resources			X		Paleontological resources exist on the BMD; however, no major soil disturbing activities would occur under the Proposed Action or Alternatives. Therefore, paleontological resources would not be impacted.
Recreation				X	See discussion in Section E10.
Socio-Economic Values				X	See discussion in Section E11.
Soils				X	See discussion in Section E12.
Special Status Species	Animals			X	See discussion in Section E2.
	Plants			X	See discussion in Section E13.
Vegetation				X	See discussion in Section E13.
Visual Resources			X		No large structures would be constructed and no major disturbances would occur under the Proposed Action or Alternatives. Therefore, visual resources would not be impacted.
Wild Horses and Burros				X	See discussion in Section E14.
Wildlife				X	See discussion in Section E15.

⁴ Other Resources determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document based on the rationale provided.

3.3 Resources Present and Brought Forward for Analysis

A. Air Quality

Affected Environment

Air quality and the emission of air pollutants are regulated under both Federal and Nevada law. The Federal Clean Air Act (CAA) requires the US Environmental Protection Agency (EPA) to identify national ambient air quality standards (NAAQS's). The CAA also requires EPA to place selected areas within the United States into one of three classes, designed to limit the deterioration of air quality. The air quality class for the entire BMD is Prevention of Significant Deterioration (PSD) Class II. PSD Class II allows for temporary, moderate deterioration of air quality. The State of Nevada, Bureau of Air Quality-Department of Environmental Protection air quality standards under NRS 445B.100 closely mirror the Federal standards.

1. Environmental Consequences of the Proposed Action

Under the Proposed Action, DRAs would be implemented to maintain vegetation within the BMD to minimize the potential for accelerated erosion events. DRAs such as temporary water hauls could result in the short-term increase of wind born particulate matter and vehicle emissions during the hauling of water. However, water hauls along with the other DRAs are designed to protect vegetation and stabilize soils and would decrease wind born particulate matter in the long-term. Any airborne particulate matter caused by the implementation of DRAs would not exceed air quality standards.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would remove all grazing from public lands determined to be affected by drought (refer to Attachment 1). Removing grazing during drought would benefit the growth of plants and ensure an adequate amount of cover remains. Wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced (Marshal 1973). Protection of living and standing dead plant cover provided by the Grazing Closure Alternative would have a beneficial impact on air quality.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of management practices that are employed during times of normal precipitation. Current management practices may be poorly suited to drought. Drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use, which may lead to a further reduction in plant cover. Inadequate plant cover can lead to substantial wind or water erosion of valuable top soil (Reece et al. 1991). Wind erosion increases the amount of airborne particulate matter, which could reduce air quality causing public safety issues such as poor visibility or respiratory problems. Delayed implementation of DRAs could also increase the potential for invasion of

undesirable plant species, which are less likely to stabilize soils. The No Action Alternative would adversely affect air quality.

B. Wildlife (Including Threatened and Endangered Species, Special Status Species, and Migratory Birds)

Affected Environment

Drought can have complex direct and indirect adverse impacts on wildlife species. In direct response to periods of water restriction, animals often undergo physiological and behavioral changes that can have energetic, survival and reproductive costs (McNab 2002). For example, animals may devote more time to searching for water, which can be energetically expensive and expose animals to greater predation risk. Indirectly, drought-induced reductions in plant and insect productivity can potentially limit the availability of important food and cover resources. Not surprisingly, many animals are food-limited during periods of drought and experience substantial weight loss leading to starvation, greater susceptibility to disease and predators, and reductions in reproductive potential (Rotenberry and Wiends 1989). In many cases, the combined impacts of drought are most pronounced among young animals (Longshore et al. 2002; McNab 2002).

Many wildlife species in the BMD are well-adapted to living in arid or semi-arid conditions. However, a number of these animals are susceptible to the negative impacts of drought, particularly during spring and early summer. These include animals that utilize 1) free water rather than metabolic water for the majority of their water requirements (e.g., most mammals and birds), 2) adequate supplies of surface water for all or portions of their life history (fish, amphibians, gastropods, many insects and other species), 3) riparian areas (e.g., several bird species), 4) dense understory vegetation as cover from predators, or 5) insect species, grass or forbs for large portions of their diet.

Within the BMD, wildlife species include 73 mammals, 231 birds, 24 reptiles, seven amphibians and 19 fish species. Of these, seven species are listed as threatened, endangered, proposed, or candidate species by the US Fish and Wildlife Service (USFWS) (Table 3). In addition, to federally listed species, the BLM protects, by policy (BLM Manual 6840), special status species designated as “sensitive” by the BLM Nevada State Director. Table 4 lists the special status species occurring, or likely to occur on the BMD. Below, the potential impacts of drought on select groups of critical species found on the BMD are assessed.

Fish

In the BMD, Lahontan cutthroat trout (*Oncorhynchus henshawi*) inhabit drainages within the Roberts Mountains and upper Reese River, both within Mount Lewis Resource Area. Drought and increasing summer temperature are considered the primary climate change risk factors likely to negatively affect persistence of these trout (Haak et al. 2010).

Railroad Valley springfish (*Crenichthys nevadae*) inhabit several warm springs in Railroad Valley near Current, Nevada within the Tonopah Resource Area. This fish is very susceptible to

water temperature fluctuations and sudden changes in water quality. Long-term drought and water divergence are considered factors that could negatively affect persistence of these fish (Abele 2011).

Mammals

Mule deer (*Odocoileus hemionus*) typically occupy high elevation summer ranges where they are nutritionally dependent on shrubs/forbs characteristic of healthy and diverse mountain brush communities. Important plants for mule deer include mountain mahogany, serviceberry, snowberry, willow, sagebrush, aspen, wild rose, eriogonum, arrowleaf balsamroot, penstemon and sorrel. Streamside and meadow riparian habitats with aspen stands are important fawn-rearing areas.

Pronghorn antelope (*Antilocapra americana*), in modest but growing numbers, occupy the mid-to lower-elevations of Smith Creek, Grass, Antelope, Monitor, Little Smoky, Kobeh, Reveille, Stone Cabin, Ralston, Paymaster, Railroad, Fish Lake, Little Fish Lake, Ione, and Fish Creek Valleys. Pronghorn are dependent on sagebrush/salt desert shrub communities with an understory of forbs. The distribution of water is the most limiting factor for pronghorn.

Desert bighorn sheep (*Ovis Canadensis nelsoni*) occur in several mountain ranges within the TFO and the Desatoya and Tobin Ranges within the MLFO. Adequate forage within a two-mile radius of bighorn sheep watering areas is critical for their survival.

Rocky Mountain elk (*Cervus canadensis*) inhabit several central Nevada mountain ranges. Currently, most of the elk occupy NDOW Management Area 16, Table Mountain and Butler Basin in the Monitor Range. There are also growing populations in the Hot Creek and Toquima Ranges. NDOW Management Area 17, Toiyabe Range, supports a small number of elk.

Birds

Major avian communities within the BMD occur in sagebrush, phreatophyte, pinyon-juniper, montane, riparian, and aspen habitats. Within each of these habitats, bird populations are likely to be negatively impacted by low annual levels of precipitation (Rich 2002; Ballard et al. 2003).

Many migratory birds are heavily dependent on riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western US (Rich, 2002). Willow, aspen and cottonwoods provide vital riparian under-story, mid-story and canopy cover to support a diverse bird community. Species using this habitat include northern goshawk (*Accipiter gentilis*), broad-tailed hummingbird (*Selasphorus platycercus*), northern flicker (*Colaptes auratus*), house wren (*Troglodytes aedon*), warbling vireo (*Vireo gilvus*), yellow-rumped warbler (*Dendroica coronata*), western wood pewee (*Contopus sordidulus*), lazuli bunting (*Passerina amoena*) and western tanager (*Piranga ludoviciana*).

Migratory birds occur in all habitats of the BMD throughout year with nesting predominantly occurring from March-July. Widely distributed species in shrub habitats include sage thrasher (*Oreoscoptes montanus*), sage (*Amphispiza belli*) and Brewer's sparrow (*Spizella breweri*),

horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). Loggerhead shrike (*Lanius ludovicianus*), common nighthawk (*Chordeiles minor*), various wrens, warblers, and swallows are also common.

Yellow-billed cuckoos (*Coccyzus americanus*) live in riparian areas dominated by cottonwood and willow. In the BMD, they mainly occur in Beatty/Oasis Valley within the Tonopah Resource Area although there have been a few historical sightings in Eureka County. It is speculated that drought could have a significant negative impact on reproductive success, as vegetative understories in riparian woodlands are typically severely reduced during drought years (Wiggins 2005).

The southwestern willow flycatcher (*Empidonax traillii extimus*) has been documented in Beatty/Oasis Valley in the Tonopah Resource Area. The combination of severe drought and upstream diversion of water is thought to contribute to territory loss or abandonment (Finch et al. 2000).

Greater sage grouse (*Centrocercus urophasianus*) occur or historically occupied most sagebrush habitats in the BMD. Drought conditions are thought to play an important role in population decline across their range (Knick and Connelly 2010). Reductions in primary plant productivity and insect populations during a drought potentially impact sage grouse because they depend on tall perennial grasses for cover, and their diet is largely comprised of forbs and insects during the breeding and brood-rearing season. In Eureka County, NV, population declines during drought periods have been linked in part to increased mortality of young (Nonne et al. 2011).

Reptiles and amphibians

Desert tortoise (*Gopherus agassizii*) inhabit about 70,600 acres of the southern end of the BMD (Mojave Desert) within the Tonopah Resource Area. Drought has been implicated as having a major negative impact on tortoise activity, energetics, and survival (Duda et al. 1999; Longshore et al. 2002).

Columbia spotted frogs (*Rana luteiventris*) are found in slow-moving or ponded surface waters and in clear water with little shade. Reproductive success is affected by water temperature, depth, and pH; and vegetative cover and the presence/absence of predators (e.g., fish, bullfrogs, etc.). The Toiyabe spotted frog is an isolated distinct population of the Columbia Frog that occur on the BMD in the Toiyabe Range. This population is vulnerable to extinction due to their isolation from other population segments, the relatively arid environment they inhabit, and land use patterns that subject their habitat to fragmentation and loss due to lowered water tables, water diversions, and pond destruction (e.g., loss of beaver ponds resulting from loss of aspen and willow). Drought is likely to reduce the sites available to these frogs and affect the connectivity of extant populations. Local extinction may eliminate source populations (Conservation Agreement and Strategy 2003).

Threatened, endangered and candidate species

BLM is required by the Endangered Species Act of 1973, as amended to ensure that no action on the public lands jeopardizes a threatened, endangered, or proposed species. Threatened, endangered, proposed, and candidate species of the BMD include:

Table 3: Threatened, Endangered, or Candidate Species

	Common Name	Scientific Name	*T	E	C
Birds	Yellow-billed cuckoo	Coccyzus americanus			X
	Southwestern willow flycatcher	Empidonax traillii extimus		X	
	Greater sage grouse	Centrocercus urophasianus			X
Fish	Lahontan cutthroat trout	Oncorhynchus henshawi	X		
	Railroad Valley springfish	Crenichthys nevadae	X		
Reptiles	Desert tortoise	Gopherus agassizii	X		
Amphibians	Columbia spotted frog	Rana luteiventris			X

Lahontan Cutthroat Trout: Lahontan cutthroat trout inhabit both Birch and Pete Hanson Creek drainages of the Roberts Mountains, northwest of Eureka, Nevada within the Mount Lewis Resource Area.

Railroad Valley Springfish: Railroad Valley springfish inhabit several warm springs in Railroad Valley near Current, Nevada within the Tonopah Resource Area.

Desert Tortoise: Desert tortoise inhabits about 70,600 acres of the southern end of the BMD (Mojave Desert) within the Tonopah Resource Area.

Columbia Spotted Frog: The Columbia spotted frog has limited distribution along the Upper Reese River, in northern Nye County within the Tonopah Resource Area.

Yellow-billed Cuckoo: The Yellow-billed cuckoo has been documented in Beatty/Oasis Valley area of the BMD within the Tonopah Resource Area with a few historical sightings in Eureka County.

Southwestern Willow Flycatcher: The southwestern willow flycatcher has been documented in Beatty/Oasis Valley area of the BMD within the Tonopah Resource Area.

Special status species – wildlife

In addition to federally listed species, the BLM protects, by policy (BLM Manual 6840), special status species designated as “sensitive” by the BLM Nevada State Director. The following table lists the special status species occurring, or likely to occur on the BMD:

Table 4: Sensitive Status Species

	Common Name	Scientific Name
Mammals	Pallid bat	<i>Antrozous pallidus</i>
	Pygmy rabbit	<i>Brachylagus idahoensis</i>

	Common Name	Scientific Name
	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
	Big brown bat	<i>Eptesicus fuscus</i>
	Silver-haired bat	<i>Lasionycteris noctivagans</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	California myotis	<i>Myotis californicus</i>
	Small-footed myotis	<i>Myotis ciliolabrum</i>
	Long-eared myotis	<i>Myotis evotis</i>
	Little brown myotis	<i>Myotis lucifugus</i>
	Fringed myotis	<i>Myotis thysanodes</i>
	Long-legged myotis	<i>Myotis volans</i>
	Yuma myotis	<i>Myotis yumanensis</i>
	Desert bighorn sheep	<i>Ovis canadensis nelsoni</i>
	Western pipistrelle	<i>Pipistrellus heperus</i>
	Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
	Fish Spring pocket gopher	<i>Thomomys bottae abstrusus</i>
	San Antonio pocket gopher	<i>Thomomys bottae curtatus</i>
Birds	Northern goshawk	<i>Accipiter gentilis</i>
	Tricolored blackbird	<i>Agelaius tricolor</i>
	Golden eagle	<i>Aquila chrysaetos</i>
	Short-eared owl	<i>Asio flammeus</i>
	Long-eared owl	<i>Asio otus</i>
	Burrowing owl	<i>Athene cunicularia</i>
	Juniper titmouse	<i>Baeolophus griseus</i>
	Ferruginous hawk	<i>Buteo regalis</i>
	Swainson's hawk	<i>Buteo swainsoni</i>
	Greater sage grouse	<i>Centrocercus urophasianus</i>
	Snowy plover	<i>Charadrius alexandrinus</i>
	Black tern	<i>Chlidonias niger</i>
	Sandhill crane	<i>Grus canadensis</i>
	Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
	Bald eagle	<i>Haliaeetus leucocephalus</i>
	Yellow-breasted chat	<i>Icteria virens</i>
	Least bittern	<i>Ixobrychus exilis</i>
	Loggerhead shrike	<i>Lanius ludovicianus</i>
	Black rosy-finch	<i>Leucosticte atrata</i>
	Lewis's woodpecker	<i>Melanerpes lewis</i>
	Long-billed curlew	<i>Numenius americanus</i>
	Mountain quail	<i>Oreortyx pictus</i>
	Flammulated owl	<i>Otus flammeolus</i>
	Vesper sparrow	<i>Poocetes gramineus</i>
	Red-naped sapsucker	<i>Sphyrapicus nuchalis</i>
	Crissal thrasher	<i>Toxostoma crissale</i>
	LeConte's thrasher	<i>Toxostoma lecontei</i>
	Lucy's warbler	<i>Vermivora luciae</i>

	Common Name	Scientific Name
	Gray vireo	<i>Vireo vicinior</i>
Reptiles	Gila monster	<i>Heloderma suspectum</i>
	Chuckwalla	<i>Sauromalus obesus</i>
Amphibians	Amargosa toad	<i>Bufo nelsoni</i>
Fish	Fish creek springs tui chub	<i>Gila bicolor euchila</i>
	Big smoky valley tui chub	<i>Gila bicolor ssp.</i>
	Fish lake valley tui chub	<i>Gila bicolor ssp.</i>
	Hot creek valley tui chub	<i>Gila bicolor ssp.</i>
	Railroad valley tui chub	<i>Gila bicolor ssp.</i>
	Big smoky valley speckled dace	<i>Rhinichthys osculus lariversi</i>
	Monitor valley speckled dace	<i>Rhinichthys osculus ssp.</i>
	Oasis valley speckled dace	<i>Rhinichthys osculus ssp.</i>
Gastropods	Elongate cain spring pyrg	<i>Pyrgulopsis augusta</i>
	Large-gland carico pyrg	<i>Pyrgulopsis basiglans</i>
	Oasis valley pyrg	<i>Pyrgulopsis micrococcus</i>
	Ovate cain spring pyrg	<i>Pyrgulopsis pictilis</i>
	Wongs pyrg	<i>Pyrgulopsis wongi</i>
	California floater	<i>Anodonata californiensis</i>
Butterflies	Big smoky wood nymph	<i>Cercyonis oetus alkalorum</i>
	Pallid wood nymph	<i>Cercyonis oetus pallescens</i>
	Railroad valley skipper	<i>Hesperia uncas fulvapalla</i>

1. Environmental Consequences of the Proposed Action

Temporary Water Hauls and Pipelines

Augmenting water sources could directly benefit some wildlife species that cannot subsist entirely on metabolic water. Augmented water sources are most likely to benefit mobile species that can move relatively long-distances to access water sources (e.g., upland game birds, some songbirds, deer, pronghorn antelope, and bighorn sheep). Conversely, augmented water sources would largely be unavailable to many populations of sedentary animals that cannot access the water (e.g., many reptiles and small mammals). Water augmentation would not directly benefit animals that subsist solely on metabolic water or do not drink from open water sources.

Indirectly, water augmentation could benefit a wide range of species by attracting livestock, wild horses and burros thereby reducing impacts on natural water sources and riparian vegetation. During drought, livestock often concentrate in and around riparian areas which can lead to degraded water quality and reduced vegetation cover. Thus, water augmentation would reduce competition between wildlife and livestock for these important riparian resources. Moreover, concentrations of livestock near augmented water sources would reduce impacts on rangeland vegetation outside of the footprint of the augmented water source. As a result, wildlife (including sage-grouse) that depend on understory vegetation during portions of their life-cycle would benefit from reduced grazing impacts range-wide.

Conversely, a potential negative impact of water augmentation concerns the concentration of livestock and wild horses and burros near the water source. Increased attendance at water sites by these animals could indirectly affect some wildlife by trampling and consuming vegetation. Wildlife are known to avoid areas near water developments that are heavily used by livestock (Leeuw et al. 2001), and these areas are thought to increase predation risk, interspecific competition, and provide avenues of disease transmission.

Temporary fencing riparian areas, wet meadows, and aspen stands

Ecologically functioning riparian areas, springs, aspen stands and seasonally wet meadows are crucially important for Nevada's wildlife and fish. However, livestock tend to congregate and linger near water sources, oftentimes having an adverse effect on vegetation and wildlife communities (Saab et al. 1995). During drought, these adverse effects can be amplified. Thus, using temporary fences to restrict access by ungulates to these areas during a drought is an effective management tool to prevent severe degradation and potentially improve habitat. Several studies have shown that fencing riparian zones may in fact be a rapid method of habitat improvement important for wildlife and fish (Schulz and Leininger 1991; Giuliano and Homyack 2004). These areas include riparian habitat for southwestern willow flycatcher and yellow-billed cuckoo, and higher elevation wet meadows utilized by greater sage grouse during mid- to late-summer (see Beck and Mitchell 2000). It is especially important that livestock be excluded from Lahontan cutthroat occupied stream reaches.

Negative impacts to wildlife include avian fence-impact mortality, particularly sage grouse. However, this impact can be largely avoided by adopting specific measures to reduce sage grouse fatal collisions (Stevens 2011).

Fences can also limit access to water sources by large wildlife (e.g., mule deer, bighorn sheep, and elk).

Livestock, wild horses and burros: changes in grazing practices, removal, and rangeland utilization

Some of the livestock, wild horse and burro management strategies (outlined in the Proposed Action) are designed to reduce stocking rates as a mechanism of minimizing long- and short-term adverse impacts to rangeland resources during a drought. Research has shown that reducing stocking rates during a drought is an important management tool for preventing overgrazing and maintaining critical wildlife habitats. Moreover, to protect important sage-grouse habitat, the BLM is instructed to evaluate the season of use and stocking rate as an important management strategy (IM-2012-043). Conversely, vegetation and water resources important to sage-grouse and other wildlife can be severely degraded by the interactive effects of overgrazing and drought.

Although the specific benefits of the Proposed Action vary depending on the wildlife species, the drought triggers for implementing management action would ensure that habitat conditions provide resources for viable wildlife populations to persist over the long-term. By reducing stocking rates, wildlife would benefit from reduced competition for plant and water resources

particularly during critical life stages. In sagebrush habitats, reducing stocking rates may especially benefit ground-nesting animals during the spring and early summer. Many of these animals require a dense understory of grasses and forbs for food and nesting cover. For example, sage grouse forage predominately on a suite of cool-season forb species that can be vulnerable to the combined effects of water stress and cattle grazing (Knick and Connelly 2010). The Proposed Action would also benefit the suite of wildlife and fish that utilize streams, riparian areas, wet meadows and aspen stands. During dry conditions, livestock often congregate near water sources, which can reduce vegetation cover by grazing and trampling and generally degrade water resources. Indeed, removing livestock from streams and riparian zones during critical periods is a key method of improving habitat for fish and wildlife (Mosely et al. 1997; Giuliano and Homyack 2004; Nelson 2010).

Wildlife and wildlife habitat would benefit indirectly by wild horse and burro gathers. Reduction of wild horse and/or burro populations during a drought would protect critical rangeland habitats from overuse and reduce drought-induced stress on wildlife. Implementing a gather would reduce the competition for forage and water resources. Habitat conditions in riparian areas, aspen stands, and uplands would be maintained, benefitting many wildlife species including sage grouse.

Wild horse and burro gathers in drought affected areas would have some, short-term negative impacts on wildlife. Wildlife present on or near trap sites or holding facilities could be temporarily displaced or disturbed during the gather activities. However, trap sites would typically be located in previously disturbed areas (i.e., gravel pits), and for short periods of time (1-3 days). Should a qualified biologist determine it to be necessary, trap sites would be inventoried prior to selection to determine the presence of sensitive species. If potential impacts could not be mitigated, these areas would be avoided.

Gather activities would not conflict with nesting periods for most bird species. Refer to the Standard Operating Procedures (SOPs) in Appendix A of the DMP (Attachment 2) for avoidance measures utilized to minimize impacts to sage-grouse and ferruginous hawks.

2. Environmental Consequences of the Grazing Closure Alternative

Impacts of the Grazing Closure Alternative are essentially the same as those under the Proposed Action. However, the removal of livestock under the Grazing Closure Alternative would have greater long-term benefits to wildlife because livestock are removed from the range for an additional growing season.

3. Environmental Consequences of the No Action Alternative

Under the No Action Alternative, wildlife species would not benefit by the management activities outlined in the Proposed Action. Instead, wildlife would be fully subjected to the potentially adverse impacts of livestock, wild horse and burro use during drought. These include exacerbated competition for forage and water between non-native and native wildlife and impacts on riparian areas and other water sources. Impacts on riparian areas and water sources can be severe because livestock tend to congregate in these areas, trampling and overgraze

vegetation. Competition between wildlife and wild horse and burros would also be substantial when water and forage are limited. Moreover, wild horse and burros are known to drive away some wildlife species from natural water sources. The long-term recovery of wildlife habitat could also be reduced under this alternative. Rehabilitation of rangelands that are overstocked during drought can be a slow and expensive process. Thus, the long-term viability of special status species and other wildlife could be substantially compromised.

C. Cultural/Historical

Affected Environment

Central Nevada has been occupied by humans for at least 11,000 years. The first inhabitants occupied the area when many of the Pleistocene pluvial lakes contained water; therefore, cultural sites of this period are frequently found on the lower pluvial lake bench terraces. As the lakes dried up, subsistence became increasingly focused on resources not related to those found around lake or marsh environments. By the end of the prehistoric period, most central Great Basin groups centered much of their subsistence on Pinyon pine. Prehistoric cultural sites can be found throughout the BMD and vary from simple, open lithic scatters of limited research potential to complex rock shelters or extensive habitation sites often containing thousands of pieces of lithic debitage, ground stone, hearth features and rock alignments.

The majority of the BMD was inhabited by bands of Western Shoshone at the time of Euro-American contact, although informants also attest to a limited presence of Northern and Southern Paiute. Western Shoshone lived in family bands, dispersing to hunt and gather seasonal plant resources. In winter, larger groups would gather in seasonal villages, usually located in sheltered areas near water, with a southern or western exposure, often shifting annually to areas where Pinyon nuts had been harvested and cached. However, this traditional lifestyle was quickly disrupted by the influx of Euro-Americans starting in the 1840s. Peter Skene Ogden, a Canadian explorer, passed through the area in 1829; in 1833, Joseph Walker retraced Ogden's path and determined that following the Humboldt River westward was the most direct route to California. Westward immigration along the Humboldt route was initiated in 1841 by the Bidwell-Bartelson party (Bowers, Martha H. and Hans Muessig, 1982). The discovery of gold in California in 1848 brought many emigrants to the area, following what become known as the California Trail; during the migration, domestic livestock decimated traditional food plants along the Humboldt corridor. In 1862, the discovery of silver ore in Austin stimulated north-south settlement and brought an influx of Euro-American miners and settlers with livestock to the area, resulting in increased impacts to the native vegetation and the livelihood of the Western Shoshone. Additionally, Pinyon pine trees were harvested for use as firewood or in construction and, most devastatingly, to manufacture charcoal to feed Eureka smelters.

The first government expedition into the region was led by John C. Fremont in 1848. This military reconnaissance team traversed the BMD through the Diamond, Kobeh and Big Smoky Valleys. In 1859, James Simpson explored a route that later became the Pony Express Trail and then the Overland Stage Route (Bowers, Martha H. and Hans Muessig 1982). These routes crossed the Diamond, Kobeh, Big Smoky, Reese River and Smith Creek Valleys.

No more than 5% of the BMD has been subject to cultural resource inventory, most of which has been project specific. As a result, portions of some basins have been intensively surveyed for cultural resources while others have received little or no inventory. Historic sites include, but are not limited to, the remains of homesteads and horse traps, mining camps, town sites, Chinese borax mines, charcoal kilns and platforms, mining/milling sites, trash dumps, trails, roads, and railroad grades. Prehistoric sites include long-term habitation sites, temporary camps, task specific sites, pinyon caches, scatters of heat-altered rock, rock shelters, petroglyphs and pictographs, rock alignments including “geoglyphs”, and quarry sites. There are recorded properties of traditional cultural and religious importance within the BMD.

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of a proposed action on properties included in, or eligible for, the National Register of Historic Places before approving or funding an action. The NHPA also requires Federal agencies to complete a cultural resources inventory prior to Federal actions or ground disturbing activities that occur on Federal lands and, in some cases, including private lands if those lands are subject to disturbance through a Federal undertaking.

Given the extensive area covered by this analysis, it is impossible to provide detailed, site-specific discussions of all the archaeological resources within the BMD. BLM can summarize some relevant information, for example, of the known archaeological sites within the BMD, many remain unevaluated for their eligibility for the National Register.

Table 5 identifies the number of sites, by County, listed on the National Register, eligible for the Register and those that remain unevaluated. For the purposes of Section 106 compliance, unevaluated sites must be treated as if eligible in terms of mitigation.

Table 5: National Register Eligibility of Sites within the BMD

County	On the Register	Eligible for the Register	Unevaluated
<i>Esmeralda</i>	1	86	313
<i>Eureka</i>	1	466	616
<i>Lander</i>	4	496	932
<i>Nye</i>	1	274	906
Totals	7	1,322	2,767

The BMD Cultural Resource Management Program is responsible for the study, evaluation, protection, management, stabilization and inventory of cultural resources. SOPs and agency guidance would reduce the likelihood of impacts to cultural resources. Before proceeding with vegetation treatments, the effects of BLM actions on cultural resources would be addressed through compliance with the NHPA, as implemented through a National Programmatic Agreement and the BLM-Nevada SHPO protocol agreement. The BLM 8100 manual series addresses the process for identifying and evaluating cultural resources and includes relevant Native American consultation.

1. Environmental Consequences of the Proposed Action

The effects of BLM DRAs on cultural resources would be addressed through compliance with the NHPA, as implemented by following the Nevada State Protocol Agreement between the BLM, Nevada and the Nevada State Historic Preservation Office (SHPO).

2. Environmental Consequences of the Grazing Closure Alternative

Drought response measures to alleviate the impacts of grazing through reduction in authorized access would also act to reduce the severity of potential impacts to cultural resources generated by livestock.

3. Environmental Consequences of the No Action Alternative

The No Action alternative could result in increased damage to cultural resources through accelerated erosion caused by trampling, and by the effect of trampling itself on newly exposed resources. Further, exposure will also increase the potential for illegal collection.

D. Native American Religious Concerns

Affected Environment

Located within the traditional territory of the Western Shoshone, the BMD administrative boundary contains spiritual/traditional/cultural resources, sites and social practices that aid in maintaining and strengthening social, cultural and spiritual integrity. Recognized tribes with known interests within the BMD are the Te-Moak Tribe of Western Shoshone (Elko, South Fork, Wells, and Battle Mountain Bands), Duck Valley Shoshone-Paiute Tribes of Idaho and Nevada, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Yomba Shoshone, Fallon Paiute-Shoshone Tribe, Timbisha Shoshone Tribe and various other community members and individuals.

Though archaeological data and theory states that the Western Shoshone (Newe) began to inhabit the Great Basin area around 600 years ago, contemporary Western Shoshone contend they were here since “time immemorial.” Social activities that define the culture took place across the Great Basin. Pinyon Pine nut gathering, edible and medical plant gathering, hunting and fishing, spiritual/ceremonial practices and trade occurred as the natives practiced a hunting and gathering lifestyle. As with the delicate and sensitive nature of the resources of the Great Basin, the native cultures appeared to be heavily impacted by social, cultural and environmental change, which rapidly accompanied the non-native migration from east to west. The Western Shoshone and other Great Basin tribes continue to practice certain cultural/spiritual/traditional activities, visit their sacred sites and hunt and gather the available game, medicinal and edible plants. Through oral history (the practice of handing down knowledge from the elders to the younger generations) many Western Shoshone continue to maintain a worldview not unlike that of their ancestors.

Such sites and activities of importance include, but are not limited to: existing antelope traps; certain mountain tops used for prayer; medicinal and edible plant gathering locations; prehistoric and historic village and grave sites; land forms associated with creation stories; hot and cold

springs; material used for basketry and cradle board making; locations of stone tools such as points and grinding stones (mano and metate); chert and obsidian quarries; hunting sites; sweat lodge locations; locations of pine nut ceremonies, traditional gathering and camping; boulders used for offerings and “medicine” gathering; tribally identified Traditional Cultural Properties (TCP’s); TCP’s found eligible to the National Register of Historic Places; rock shelters; “rock art” locations; lands that are near, within or bordering current reservation boundaries; areas associated with tribal land acquisition efforts; water sources in general, which are considered the “life blood of the Earth.” Specific and detailed sites, locations, participant names, and uses are excluded and are considered highly confidential. Most of the lands administered by the BMD have not been subject to Native American Consultation or cultural resource inventory.

1. Environmental Consequences of the Proposed Action

Although site specific plans for the implementation of the DRAs identified in the Proposed Action are not analyzed under this document, the potential does exist to impact Native American sites and activities of a spiritual/cultural/traditional nature. Specific impacts are dependent on DRAs selected and dates of implementation. Therefore, affected tribes must be given the opportunity to give input and participate in the decision making process.

In accordance with the NHPA (P.L. 89-665), the NEPA(P.L. 95-341), the FLPMA (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341) the Native American Graves Protection and Repatriation Act (P.L. 101-601) and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on proposed projects. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities and resources. Consultation with Native American tribes would occur through the decision process prior to the implementation of any actions. It is believed that Native American resources and sites of cultural, traditional and spiritual use maintain their physical and spiritual integrity due to their undisturbed and pristine locations. Not to say that certain areas lose their importance and sacredness due to being physically impacted. Some areas within the BMD have experienced past and present ground disturbance, but still maintain spiritual integrity. The fact that an important site has been disturbed in the past does not lessen its sacredness. However, ongoing disturbance can have an impact to the existing cultural/traditional/spiritual activities that currently take place in certain areas.

The Proposed Action is designed to alleviate the impacts of livestock and wild horses and burros during drought. The implementation of the DRAs described in the Proposed Action would reduce the probability of soil erosion, which would have a beneficial impact on the protection of Native American resources. Any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls, electric fences and above ground pipelines) would be surveyed for cultural resources prior to implementation. The specific placement of temporary projects is flexible and would avoid any known cultural resources. Any temporary electric fences constructed would be designed in a manner that would allow access at all current access points (e.g., trails, roads, etc.). BLM should not bar or prevent traditional practitioners from gaining access to existing and known medical/edible plant locations and other culturally important sites.

2. Environmental Consequences of the Grazing Closure Alternative

The implementation of the Grazing Closure Alternative would protect vegetation and reduce the probability of soil erosion, which would have a beneficial impact on the protection of Native American resources.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and result in a continuation of current management practices, which are often poorly suited to drought. Drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use. This may lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of important cultural resources. Edible and medicinal plants may be reduced or eliminated from traditional cultural sites if overgrazing occurs during drought. Riparian areas may experience heavy use by livestock and/or wild horses and burros as upland vegetation dries out and becomes less palatable and water resources become scarce. The delayed implementation of DRAs under the No Action Alternative would have adverse impacts on Native American resources.

E. Noxious Weeds/Invasive Non-native Species

Affected Environment

In Nevada, noxious weeds are designated by statute and defined as, “detrimental or destructive and difficult to control or eradicate”. BLM further defines noxious weeds as, “generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the US” (USDI FES 2007). An invasive species is defined as, “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Executive Order 13112). In plain language, a weed is any unwanted plant.

Noxious weeds and invasive, non-native species are spread directly or indirectly by people, equipment, animals or transported by wind and water. Weed infestations rise proportionally with increased human activities like mining extraction/exploration, road maintenance, livestock grazing, recreational activities/off-highway vehicles (OHVs) and general soil disturbing activities. The BLM’s strategy for noxious weed management is to, “sustain the condition of healthy lands, and, where land conditions are degraded, to restore desirable vegetation to more healthy conditions” (USDI FES 2007). Weeds threaten public lands by spreading into and infesting sensitive riparian ecosystems, important rangelands, wildfire scars and developed lands such as rights of way and recreational areas. Threats can come in the form of reduced biodiversity, a weakened ecosystem, a higher propensity for soil erosion, increased frequency of wildfires and limited food resources for wildlife. Weeds on private lands have the potential to spread onto public lands and vice versa.

At this time, the BMD's priority weed suppression efforts are concentrated on Russian/spotted knapweed, tamarisk (salt cedar), perennial pepperweed (tall white top), hoary cress (white top), various thistle species and invasive annual grasses. The State of Nevada, Department of Agriculture (NDOA) keeps an up-to-date list of designated noxious weeds at http://agri.nv.gov/nwac/PLANT_No WeedList.htm. The most up-to-date Federal list is maintained by the US Department of Agriculture (USDA) and can be found at their website, <http://plants.usda.gov/java/noxious?rptType=Federal>.

Of the 10.5 million acres within the BMD boundaries and administered allotments, weed surveys have been conducted on about 2 million acres. Of the 2 million acres surveyed to date, it is estimated that 246,000 acres are infested by noxious weeds. Of the 10.5 million acres on the BMD, only "pockets" of treatment have been conducted on about 15,000 acres. Additionally, herbicide treatments have been site-specific with few repetitive treatments in the same location. Cheatgrass and red brome are not normally surveyed for because invasive annual grasses are so wide spread and established in the rangeland of the BMD.

1. Environmental Consequences of the Proposed Action

Noxious weeds and non-native invasive species are more likely to invade areas that are in poor rangeland condition. Areas that maintain a healthy and diverse population of native species are more resistant to invasion. Drought or water stress affects virtually every physiological and biochemical process in plants (Hanselka and White 1986). Plants that are stressed are more vulnerable to grazing. The degree to which drought impairs the range depends on the intensity, frequency and timing of grazing (Howery 1999). The utilization of perennial bunchgrasses increases significantly during drought years (Bedell and Ganskopp 1980). Therefore, precautions must be taken to ensure proper management occurs in order to avoid overutilization and further degradation of range conditions during drought. The Proposed Action is designed to reduce the impacts of authorized uses and activities on natural resources. This would maintain existing plant communities and limit the degradation of range resources, which would reduce the potential for invasion by noxious weeds and invasive annual species.

The Proposed Action provides for targeted grazing of monotypic annual communities (e.g., monotypic cheatgrass stands). Targeted grazing of monotypic invasive annual communities would be used to reduce grazing pressure on areas dominated by native species. On these sites, prescribed livestock grazing can be applied to achieve maximum damage to annual grasses with little concern for non-target plants (Peischel and Henry 2006). Grazing would be focused during the spring and/or fall months to take advantage of early spring and fall growth of the annuals. Livestock would be removed upon reaching a two-inch average stubble height in order to provide protection from wind and water erosion. This, in turn, would result in the reduction of invasive annual species and limit adverse impacts to native perennial species.

A wild horse or burro drought gather could result in the spread of existing populations of noxious weeds, invasive or non-native species. Precautions would be taken prior to setting up trap sites and holding facilities to avoid areas where noxious weeds, invasive or non-native species exist to lessen the chance of spread. The Contracting Officers Representative (COR), Project Inspector (PI), or other qualified specialist would examine proposed holding facilities and traps sites prior

to construction to determine if noxious weeds were present. If noxious weeds were found, a different location would be selected.

Temporary trap sites and holding facilities would be selected in previously disturbed areas such as gravel pits. Areas disturbed specifically by gather operations would be monitored, re-vegetated (if appropriate), and treated for potential new infestations of non-native invasive plants as a result of gather operations.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would provide rest for all drought afflicted areas. Resting these areas would provide the vegetation an opportunity to take full advantage of available soil moisture and nutrients. Uninterrupted growth would increase plant cover and reduce the potential for soil erosion. This would limit the opportunity for noxious weeds and invasive annuals to invade those communities.

The Grazing Closure Alternative would not provide for the targeted grazing of invasive annual species, which would limit the opportunity to reduce the vigor of invasive species that may compete with native vegetation for soil moisture and nutrients.

3. Environmental Consequences of the No Action Alternative

Grazing management practices before, during, and following a drought influence the ability of native rangeland vegetation to recover (Encinias and Smallidge 2009). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurrow and Taylor 1999). Although all rangelands are adversely affected by drought regardless of condition, rangeland in fair or poor condition is more adversely affected and recovers slower than rangeland in good or excellent condition (Howery 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices. Delaying the implementation of livestock and/or wild horse management strategies that are appropriate for drought conditions would increase the potential of noxious weed and invasive species establishment and spread by extending the period of time the range is in a poor or stressed condition.

F. Riparian-Wetland Zones

Affected Environment

Riparian and wetland areas adjacent to surface waters are the most productive and important ecosystems on the BMD. Riparian and wetland areas represent less than 1% of the BMD. However, these areas play an integral role in restoring and maintaining the chemical, physical and biological integrity of water resources. Research has shown riparian and wetland habitats have a greater diversity of plant and animal species than adjoining areas. Healthy riparian and wetland areas have the potential for multi-canopy vegetation layers with trees, shrubs, grasses, forbs, sedges and rushes and are valuable habitat for a wide variety of wildlife species. Healthy systems also filter and purify water, reduce sediment loads, enhance soil stability, provide micro-climatic moderation and contribute to ground water recharge and base flow. They stabilize water

supplies, ameliorating both floods and droughts. Functioning riparian/wetland areas provide many values; recreation, fisheries, wildlife habitat, increased water supply, cultural, historic and economic. Economic values yield forage for livestock production, timber harvest and mineral extraction.

Functioning riparian areas dissipate energy created from water and sediment during runoff events. Riparian-wetland plants have adapted to the stressors associated with flooding and saturation of soils. Their above ground biomass presents a surface discontinuity that functions to slow the velocity of flowing water, deposit alluvial sediment and aid in floodplain development, stabilize streambanks, enhance infiltration and recharge groundwater supplies.

Grazing can have a negative impact on riparian and wetland zones. When not managed properly, livestock can remain in riparian areas damaging stream banks, over grazing riparian vegetation, compacting soils and contaminating streams with waste. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming non-functioning and degraded, especially during times of drought. Livestock can also introduce non-native plant species. Non-native species may out-compete native species, altering the natural ecosystem.

Non-functioning riparian areas are less capable of slowing water velocity, catching sediment, stabilizing streambanks, allowing for infiltration and recharging groundwater supplies. Reduced vegetative densities could lead to increased surface runoff. Gullies would continue to down cut until they either achieve equilibrium or until bedrock is found. Non-functioning riparian areas lose the capability to store water in the soil and yield less water for late summer base flows increasing the potential for erosion. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming non-functioning and degraded, especially during times of drought.

1. Environmental Consequences of the Proposed Action

The direct impact of the Proposed Action is the maintenance of riparian-wetland vegetation during drought. Marlow (1985) studied the distribution pattern of livestock in Montana during August and September and observed 80% of the forage came from the riparian and wetland resources, which comprised less than 4% of the pasture. Similar distribution patterns have been observed within the BMD. It is expected that livestock would utilize riparian and wetland resources to a greater degree as drought conditions worsen due to reduced production and palatability of upland vegetation during drought. The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and periods of below average precipitation compound the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). DRAs identified in the Proposed Action would improve the distribution of livestock and/or wild horses and burros and protect riparian areas from overgrazing during drought. Implementing the drought response triggers described in the Proposed Action would require that 4-inches of residual stubble remain following grazing. Accumulating 4-inches of residual above ground vegetation would aid in filtering and stabilizing sediment, protecting stream banks and shorelines from trampling, providing shade and retaining water longer, dissipating flood energy and ensuring sufficient biomass to improve plant health and vigor (Clary and Leininger 2000).

The DRAs described in the Proposed Action would limit the impacts of livestock and wild horses and burros on riparian areas during drought. These actions would be implemented in combination or separately once drought response triggers are met.

Changes in season of use would be used to avoid hot season grazing of riparian areas. Livestock tend to congregate within riparian areas during years of normal precipitation. If drought occurs this behavior would be exacerbated due to a reduction in the quantity and quality of upland vegetation. Measures that exclude and/or intensely manage livestock grazing of these areas while drought conditions persist are needed to provide for the maintenance of riparian vegetation and protection of riparian systems.

Temporary range improvement projects such as water hauls, above ground pipelines or electric fences would be used to reduce the impacts of livestock and/or wild horse and burro use on riparian areas. Temporary water hauls and/or above ground pipelines would be used to provide water to livestock and/or wild horses in areas away from riparian areas. Providing off-stream water can be effective in altering distribution patterns of cattle grazing in riparian areas and adjacent uplands (Porath et al. 2002). Temporary electric fences would be used to protect and/or manage riparian areas separately. Sensitive areas can be separated from other areas and managed differently (Bailey 2004). The ability to manage riparian areas independently would ensure drought response triggers developed for riparian areas are not exceeded. Upon reaching the triggers, livestock could be excluded from the areas, which would reduce negative impacts of grazing to riparian areas during drought.

Partial or complete rest of an allotment and/or HMA would reduce the adverse impacts of grazing on riparian areas during drought. Resting these areas would allow riparian vegetation to make the best use of limited resources during drought. Improved root and shoot growth of vegetation aids in bank stability, water retention, reduces sedimentation and leads to a better functioning riparian system. Wild horse or burro gather activities would not have any direct impacts to riparian wetland zones or water quality as trap sites and holding corrals would not be constructed near riparian areas.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would require all drought afflicted areas to be closed to grazing. The closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and provide one additional growing season of rest for plant recovery following the cessation of the drought. Rest of these areas would allow riparian vegetation to make the best use of limited resources during drought. Improved root and shoot growth of vegetation aids in bank stability, water retention and reduces sedimentation and leads to a better functioning riparian system.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to periods of drought. As stated earlier, drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use.

Grazing can have a negative impact on streams. When not managed properly, livestock can remain in riparian areas damaging stream banks, over grazing riparian vegetation, compacting soils and contaminating streams with waste. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming non-functioning and degraded, especially during times of drought. Livestock can also introduce non-native plant species. Non-native species may out-compete native species, altering the natural ecosystem. The No Action Alternative would adversely impact riparian resources within the BMD.

G. Water Quality

Affected Environment

The Nevada Division of Water Resources (NDWR) has designated 14 Hydrographic Regions. The BMD overlies three hydrographic regions (see Map 4). These Hydrographic Regions include: Humboldt River basin in the northwestern portion of the BMD, the Central region, which comprises most of the BMD, and the Death Valley basin, a minor area in the extreme southern portion of the BMD. The BLM district boundaries do not correspond to NDWR region or basin boundaries. These regions are characterized by internal surface drainage and ground water flows. The northern half of BMD drains surface and ground waters into the Humboldt River system, depositing it into the Humboldt Playa. The Central and Death Valley regions are driven by many internal basins with individual “terminal” playas. Groundwater contained in carbonate geology layers drain into adjacent playas resulting in shallow and intermediate groundwater aquifers that are present across BMD, feeding seeps and springs.

Average precipitation in the BMD ranges between 5 and 25 inches with the majority being received as snow during the months of November through March. Numerous perennial and intermittent streams flow within the area with peak flows occurring during the spring in response to melting snow.

Runoff from mountain ranges is the major source for perennial and intermittent streams, reservoirs and aquifers in the valleys. Ground water resources provide water for domestic use, mining, irrigation, wildlife and livestock. Surface water resources such as streams, ponds, reservoirs, springs and seeps provide water for domestic use, mining, irrigation, wildlife, livestock and recreation.

Available water quality data indicate that surface and ground waters often exceed the Environmental Protection Agency and state of Nevada standards for drinking water. Typical constituents are fecal and total coliform, arsenic, mercury, dissolved solids, manganese, sulfates, carbonates, copper and iron.

Many of the constituents are inherent in the water as a result of natural processes in the aquifer or surface strata. Current surface water quality problems, in part, are the result of stream bank erosion and sedimentation through the reduction of vegetative cover in watersheds and streams.

The Clean Water Act requires that Federal actions comply with State water quality standards and do not impair surface or ground waters. Standards are established in relation to the beneficial

use provided, such as human consumption, irrigation, fisheries, livestock or recreation. The natural quality and composition of water is driven by soil interactions, transported solids, rocks, vegetation, groundwater and the atmosphere.

1. Environmental Consequences of the Proposed Action

Marlow (1985) studied the distribution pattern of livestock in Montana during August and September and observed 80% of the forage came from the riparian and wetland resources, which comprised less than 4% of the pasture. Similar distribution patterns have been observed within the BMD. It is expected that livestock would utilize riparian and wetland resources to a greater degree as drought conditions worsen due to reduced production and palatability of upland vegetation during drought. As livestock and/or wild horse and burro use of riparian areas increases, the probability of disease-causing organisms contaminating human water supplies increases (Belsky 1999). Increased animal waste associated with riparian grazing also introduces nutrients to aquatic systems. This could increase the food base for the aquatic system and if excessive, could lead to large algae blooms and subsequent decomposition. This could lead to low dissolved oxygen concentrations and endanger aquatic organisms (Belsky 1999).

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, drought compounds the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). This could lead to an increase in sedimentation and a reduction in overall water quality.

The DRAs described in the Proposed Action are designed to limit the time livestock and/or wild horses and burros spend in riparian areas. Depending on the action(s) selected, livestock may be excluded from riparian areas during times of drought. The reduction of time or complete exclusion of livestock and/or wild horses and burros from riparian areas would reduce fecal deposition and ensure grazing use does not exceed drought response triggers (i.e., maintain a 4-inch stubble height). Clary and Leininger (2000) found that accumulating 4-inches of residual above ground vegetation would aid in filtering and stabilizing sediment, protecting stream banks and shorelines from trampling, providing shade and retaining water longer, dissipating flood energy and ensuring sufficient biomass to improve plant health and vigor. Adhering to drought response triggers and implementing the DRAs would have a positive effect on water quality.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would close all drought-afflicted areas to grazing. The closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and provide one growing season of rest for plant recovery following the cessation of the drought. Rest of these areas would allow riparian vegetation the ability to make the best use of limited resources during drought. Improved root and shoot growth of vegetation aids in bank stability, water retention, reduces sedimentation and leads to a better functioning riparian system. No new animal waste would be deposited in or near water, which would eliminate the introduction of bacterial contamination. The Grazing Closure Alternative would have a positive effect on water quality.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought. As stated earlier, the concentrated use of riparian areas is exacerbated during drought. This would lead to the increased use of riparian areas by livestock and/or wild horses and burros. The result would be an increase in the introduction of animal wastes, a decrease in vegetative cover and increased erosion. A reduction in water quality would occur and may be long lasting depending on erosion and sedimentation rates.

H. Grazing Management

Affected Environment

There are currently 87 permittees and 8 lessees on the BMD, which are authorized to graze livestock across 10.5 million acres of public land. The BMD is divided into 94 grazing allotments, 52 administered by the MLFO and 34 administered by the TFO. Fifty-six allotments have been evaluated and management plans implemented to ensure conformance with multiple use objectives. Livestock operators graze cattle, sheep and horses within these allotments. Annually, the BMD authorizes approximately 362,869 AUMs.

In addition to livestock grazing, multiple range improvements (e.g., fences, wells, pipelines) have been authorized on the public lands administered by the BMD. These range improvements have been constructed to aid in the control of livestock and improve grazing management.

1. Environmental Consequences of the Proposed Action

The Proposed Action would result in an increase in grazing management practices on allotments occurring within drought-afflicted areas of the BMD. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs from permittees. The specific consequences of these inputs have been analyzed within the Socio-Economic Values section of this document. Implementation of drought gathers to remove wild horses or burros from drought affected areas would improve recovery from drought, resulting in healthier, more productive plant communities and riparian areas in future years, which would benefit future opportunities for livestock grazing.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would require the removal of livestock from the drought afflicted public lands within the BMD. The removal of livestock would result in the elimination of grazing management for the duration of the drought. If no livestock were being grazed on public land, no grazing management would be needed. The closure of grazing allotments could cause a financial hardship for permittees resulting from the loss of opportunity to graze livestock on public lands. The impacts to permittees resulting from a grazing closure have been analyzed within the Socio-Economic Values section of this document. The Grazing Closure Alternative would eliminate grazing within drought afflicted areas for the duration of the drought and one

additional growing season following the cessation of the drought. This could improve the vigor of plants during drought and improve post drought recovery. In the long-term the Grazing Closure would be beneficial to grazing management, in that it would ensure future opportunities for grazing due to improved rangeland conditions.

3. Environmental Consequences of the No Action Alternative

Under the No Action Alternative, management responses to drought would require the preparation of separate EAs for individual areas across the BMD. This would increase response time and reduce the effectiveness of management during a drought. In many instances current livestock and wild horse and burro management actions would continue with no modifications and therefore there would likely be no short-term impacts to grazing management. However, as discussed previously, a continuation of current livestock grazing management during drought could lead to the degradation of rangeland resources. During prolonged drought, rangeland degradation may adversely affect the sustainability of rangeland grazing and create situations where rangelands fail to meet BLM Standards and Guidelines (S&Gs) for rangeland health. If S&Gs for rangeland health are not met, the BLM is mandated to implement changes to management activities so that rangelands "...are, or are making significant progress toward..." meeting rangeland health S&Gs (43 CFR §4180, Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration) and the appropriate Resource Advisory Council Guidelines. Additionally, the BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which could adversely impact grazing management.

I. Land Use Authorization

Affected Environment

The BLM administers the majority of the land within the BMD and provides for land use authorizations including utility lines, water pipelines, access roads, temporary use permits, public purpose leases, airport leases, wind energy monitoring towers and communication use leases located on mountaintops. The privately held lands are owned by individuals (e.g., homes, businesses and ranches), the county, and mining companies.

1. Environmental Consequences of the Proposed Action

The Proposed Action would reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The DDMP identified in the Proposed Action would provide for the early detection and prompt response to drought. A quick response to drought would prevent further degradation to affected resources within the BMD.

The maintenance of rangeland health would reduce soil erosion and the potential for noxious weed invasion. This would have a positive impact on land use authorizations by reducing the maintenance cost of right-of-ways as well as protect access to sites or the sites themselves.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would have similar impacts as the Proposed Action. The removal of grazing would maintain vegetative cover and reduce the potential for soil erosion and noxious weed invasion.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management actions would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased susceptibility to soil erosion. Noxious weeds and non-native invasive species are more likely to invade areas that are in poor condition. Noxious weeds increase the costs for maintenance and soil erosion could damage access to sites or the sites themselves; therefore, the No Action Alternative would negatively impact land use authorizations.

J. Recreation

Affected Environment

The BMD offers a wide variety of dispersed recreation opportunities including hunting, fishing, camping, shooting, horseback riding, OHV use, hiking, photography, historical sightseeing, rock hounding, wild horse and burro viewing and photography, and nature study. Although many of the recreation activities are dispersed across the district, several developed and undeveloped recreation sites occur within the BMD.

Developed recreation sites include Mill Creek Campground, Hickison Petroglyph Recreation Area and Rhyolite Historic Town. Undeveloped recreation sites include Tonkin Spring Reservoir, Roberts Creek, Smith Creek Playa, Spencer Hot Springs, Lunar Crater Back Country Byway, Pony Express National Historic Trail and Crescent Sand Dunes.

Each year the Tonopah Resource Area has several OHV-motorized events. Indications are that the number of events will probably increase over the next several years. There are several areas within the BMD, which are known for their scientific, educational and/or recreational values. These areas include, but not limited to Hickison Petroglyph Recreation Area, Railroad Valley Wildlife Management Area, Lunar Crater Backcountry Byway and the Crescent and Clayton Valley Sand Dunes Areas.

1. Environmental Consequences of the Proposed Action

The Proposed Action would have a minimal negative impact on recreation within the BMD due to the installation of temporary water sources and fencing (e.g., temporary water hauls, water pipelines, and fencing). These installations would affect the aesthetics of rangeland and riparian resources within the BMD, and depending on location, could limit access to areas used for recreation.

Changes in livestock management practices (e.g., change in season of use, reduced grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), targeted grazing of invasive annual communities, and temporary change in the kind or class of livestock) under the Proposed Action would have a minimal positive impact on recreation within the BMD. Recreation within the BMD is dispersed and primitive in nature and livestock grazing occurs in areas that coincide with recreational use. Some recreation areas could see a reduction in conflicts with livestock if these actions are implemented.

Wild horse and burro gathers under the proposed action would have a negative impact on wild horse and burro viewing within the BMD. In recent years, there has been an increased interest in wild horses and wild horse viewing within the BMD. If gathers are implemented under drought conditions, this would reduce opportunities to view wild horses and burros within the BMD in the short-term. However, the Proposed Action would provide for the viewing of healthy wild horses and burros in future years.

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would have a positive impact on recreation within the BMD. Recreation within the BMD is dispersed and primitive in nature and livestock grazing occurs in areas that coincide with recreational use. Removing livestock from the range would reduce the potential for conflicts between livestock and the recreating public. Additionally, safety would improve as the potential for collisions between vehicles and livestock would be eliminated. These benefits would last for the duration of the drought plus one growing season following the cessation of the drought.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would negatively impact recreation within the BMD. Under drought conditions, livestock, wild horses and burros would congregate in areas that receive a higher abundance of moisture, especially riparian areas. Some of these riparian areas could also be used by recreationist. Potential negative impacts include the degradation of rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination.

K. Socio-Economic Values

Affected Environment

The BMD includes all or portions of Lander, Esmeralda, Eureka and Nye Counties, Nevada. The primary economic activities that contribute to the economic base for lands within the BMD are mining, gaming, transportation, agriculture and recreation.

Esmeralda County is a rural county with a large amount of undeveloped open space; the largest town in the county is Goldfield with an estimated population of 415 (Esmeralda County 2011). The entire county has a population below 1,000 and has experienced a slight decrease in population over the last ten years (US Census Bureau 2009). The county has always been

sparsely settled except during the first decade of the 20th century when the population of Goldfield reached perhaps as many as 30,000 as a result of a gold mining boom (Esmeralda County 2011). Mining activity subsided by the end of the 1910s and the economy and population declined afterwards.

Population density as of 2010 was estimated to be approximately 0.2 people per square mile, among the lowest densities for counties in the continental US. Today, the sparsely populated county continues to rely on a mining, ranching, and agricultural economy as well as tourism, recreational resources, and an emerging potential for renewable energy production (Esmeralda County 2010). Recreationally, Esmeralda County offers hunting, fishing, hiking, and four-wheel drive trails as well as old mining camps and ghost towns (Esmeralda County 2011).

Median household income was \$44,118 (per 2005-2009 average); per capita income was \$30,763; and 7% of people fell below the poverty level. Unemployment rates in the county have ranged from a high of 8.6% in 2000 to a low of 3.2% in 2007. Unemployment in 2010 was 8.3% (Bureau of Labor and Statistics 2011). Esmeralda County had the largest proportion of government-employed workers in 2008, at 20%, with the national average at 13.5% (Headwaters Economics 2011).

Like Esmeralda County, Eureka County is a rural county. The Eureka County economy is primarily dependent on ranching, agriculture, and mining (Eureka County 2011a). The town of Eureka was settled in 1865 after the discovery of a rich ore deposit in the area and was designated the county seat in 1873. Beowawe, now largely abandoned, was originally established as a supply point for mining districts in the area. Demand for energy and precious metals has historically bolstered economic activity through the production of gold. Eureka has gone through boom and bust cycles, which are inherent in a mining economy. Eureka County, at just under 2,000 people, has the second smallest population of any county in the state of Nevada (Eureka County 2011b; US Census Bureau 2010).

Population density as of 2010 was estimated at around 0.5 people per square mile, which is extremely low when compared to the state of Nevada, at 24.6 people per square mile (US Census Bureau 2010). Mining comprises a large proportion of the economy in Eureka County. Agriculture, although it comprises a much smaller portion of the total labor force, is vital to the county's economy and has been a steady economic force for decades. Recently, travel, tourism and recreation have grown in importance to the local economy (Eureka County 2003).

Median household income was \$61,472 as per 2005-2009 average, which is the highest of all four counties in the BMD, and makes Eureka the only county above the state average of \$55,585 in median household income for 2005-2009. Eureka also had the lowest rate of persons below poverty (4.8% for 2005-2009) of any of the four counties in the planning area (US Census Bureau 2009). As per 2005-2009 averages, Eureka County had the highest percentage of people employed in the agriculture, forestry, hunting and fishing, and mining industries at 41% (US Census Bureau 2009).

It should be noted that for Eureka County (and other counties as well), the statistics provided by the US Census Bureau and other similar sources are representative of the larger demographic and

geographic area outside of the BMD and should be received in that context. Eureka County's population, for example, totaled 1,987 people in 2010 (US Census Bureau 2010). There are, according to the Eureka County Profile, only three established communities in the county: Eureka, Crescent Valley, and Beowawe. Only one of these established communities, the town of Eureka, exists within the BMD. The majority of the County's residents live in the unincorporated town and county seat of Eureka, and a remaining number of people live in Crescent Valley and Beowawe. The 2000 Census reported that 1,103 people lived in the Eureka Census County Division and 548 lived in the Beowawe census county division (Eureka County 2011b). Eureka County is over 2,673,300 acres, and over such a large expanse of land, resources vary geographically and different areas are inclined to different industries.

Lander County is a county of about 6,000 people (US Census Bureau 2010). The Town of Battle Mountain is the seat of government for Lander County. The Town of Battle Mountain began as a rail stop servicing the Battle Mountain Mining District, formed in 1866. The rail line is still in service and has been a major factor in the economic life and resulting urban form of Battle Mountain. The town continues to serve as a regional center in support of mining, ranching and tourism (Lander County 2011). Kingston Canyon is a historic mining district, which dates back to silver mines in the 1860s, and now hosts some of the best-varied trout fishing in the state (Lander County 2011). About 30% of people privately employed in Lander County are employed in the mining industry (Headwater Economics 2011). Lander County's economy has been dominated by mining, but agriculture also plays a significant role in the local economy. Currently, over 85% of the county is public land managed by federal agencies. Lander's population density as of 2002 was estimated at around .99 people per square mile (Lander County 2011).

Median household income was \$66,525 (per 2005-2009 average); per capita income was \$25,287; and 12.2% of people fell below the poverty level. Unemployment rates in the county have ranged from a high of 15.2% in 1994 to a low of 2.9% in 2005 and 2007. Unemployment in 2010 was 7.4% (Bureau of Labor and Statistics 2011).

Nye County has experienced considerable population growth in the last few decades: the population of Nye County was about 9,000 people in 1980; 18,000 people in 1990; 32,000 people in 2000, and about 44,000 people in 2010 (US Census Bureau 1995, 2000, 2010). Nye County is the third-largest county in the continental United States in terms of land area, and the vast majority of this land area is managed by the federal government. Of the 11,560,960 acres that comprise Nye County, 822,711 acres, or just over 7% of the total, is private land (Nye County 1994). As of 1990, 18% of Nye County residents made their living in mining, which includes oil and gas extraction (Nye County 1994). Additionally, a number of ranchers graze cattle on allotments in Nye County. Many of the retail and service establishments in the county draw a substantial portion of their business from tourism and recreation visitors using and viewing attractions on public lands throughout Nye County and adjacent counties (Nye County 1994).

Nye County: Median household income was \$41,181 (per 2005-2009 average); per capita income was \$22,687; and 18.9% of people fell below the poverty level. Unemployment rates in

the county have ranged from a high of 18.8% in 2010 to a low of 3.1% in 1990. The average unemployment in 2010 was 17.2% (Bureau of Labor and Statistics 2011).

Although small or corporate classes of livestock operations both contribute social and economic benefits to northern Nevada, economic challenge to smaller family operations is probably most likely to harm the social fabric of small communities. This would be especially true if permittees were forced to leave the area because of financial stress. Family operations are typically of great importance to county governments and even to some of the general public. BLM is concerned about and aware of the potential socio-economic consequences of rangeland management actions. Nevertheless, rangeland management decisions in the BMD must balance the need to reasonably support the social fabric and economies of small communities as well as maintain the public land natural resource base upon which the livestock industry relies. Thus, BLM decisions must be crafted in light of the public land's capacity to support wild horses and burros and livestock herds. And where carrying capacity is limited by drought conditions, BLM is compelled by law and by federal regulation to take actions that would result in sustainable grazing use and functioning rangelands, according to the S&Gs and 43 CFR § 4180. BLM has no access to individual permittee financial records. Further, the BMD does not intend to request financial records from ranchers for socio-economic analysis purposes. Consequently, this EA section estimating socio-economic impacts of the Proposed Action and Alternatives would only address animal unit month (AUM) changes and costs associated installing temporary range improvement projects (i.e., water troughs, pipelines, fencing). Because BLM cannot conduct a thorough and accurate analysis of how permitted AUMs may affect individual ranchers economically, it is also not possible to predict accurately the consequences to ranches under AUM reductions. This may or may not lead to existing ranches becoming economically unviable. The BLM also assumes that if existing ranches fail, some other corporation or individual could purchase the base property and grazing privileges. It is not possible to foresee which base properties, if any, may change out of livestock production and into some other form of business. If base properties remain active for livestock production, the industry as a whole would continue to exist but under different ownership and likely with reduced income.

It is important to note that BLM is directed by the Taylor Grazing Act to take actions that will stabilize the livestock industry that is dependent upon public rangeland forage. However, it may not be possible for BMD BLM to guarantee that every existing livestock permittee would survive as an economic unit or in a manner to which existing ranchers are accustomed in the event that BLM must reduce AUMs to mitigate rangeland impacts due to drought conditions.

For smaller family operations, economic setbacks or other production limitations could greatly challenge their ability to remain viable and a part of the community in which they choose to live. The livestock industry is not alone in facing potential changes to preferred lifestyles and ways of generating income. The same type of economic pressures and concerns about maintaining a way of life that are affecting permittees, are also affecting other commodity producers and businesses.

Aside from the AUM changes described in this EA, ranch viability (e.g., sustainable ranching operations capable of supporting families and paying for necessary additional help) would likely be influenced by factors beyond BLM control. These factors may involve livestock price fluctuations, foreign competition, transportation and fuel costs, public land forage limitations due

to drought, winter livestock feeding costs, private pasture rental fees, and other similarly unpredictable factors.

1. Environmental Consequences of the Proposed Action

The Proposed Action is designed to prevent degradation of rangeland resources and protect uplands and riparian areas during drought, which would promote rangeland sustainability for wild horses and burros, livestock, and wildlife. Providing for sustainable grazing management that prevents degradation of habitat conditions for wildlife and wild horses would in turn increase economic opportunities for livestock operations, help sustain livelihoods for the multiple families employed by these ranching operations, and foster more desirable social opportunities.

Continuing viable ranching operations would also enhance the economies of Esmeralda, Eureka, Lander, and Nye Counties through taxes and goods and services purchased by the ranches and people employed by these ranches. By maintaining viable ranching operations and protecting rangeland conditions in the BMD, traditions associated with the ranching communities within the BMD would be maintained.

Under the Proposed Action, public lands within the BMD would continue to contribute environmental amenities such as open space, scenic quality and recreational opportunities (including hunting, bird watching, sightseeing, hiking, and OHV). These amenities would remain but could be reduced if rangeland resources are not protected during drought so that they may provide recreational opportunities such as wildlife viewing and hunting.

Costs associated with the materials, labor, and transportation necessary to implement temporary range improvement projects (i.e., water troughs [water hauls], above ground pipelines, fencing) under the Proposed Action could adversely impact permittees. Conversely, the goods and services purchased by permittees to implement temporary range improvements could enhance the economies of local communities and counties. These economic impacts would be expected to be of short-term duration; however, protecting degradation of rangeland resources (through the use of temporary range improvements) would promote rangeland sustainability thereby providing available forage resource to support livestock grazing in the future.

Under the Proposed Action, temporary reductions in authorized AUMs could adversely impact permittees. As directed in BLM Washington Office instruction memorandum (IM) No. 2012-070, the cost to permittees to find alternative forage in Nevada is estimated at \$13.00 per AUM to place livestock on private pasture, which does not include labor, fuel, and equipment for hauling livestock if only distant pasture is available. According to BLM WO IM No. 2012-070 the BLM charges permittees \$1.35 per graze livestock on BLM lands; a difference of \$11.65 per AUM. The cost of providing hay is variable based upon annual supply and demand, but is likely to be much higher than pasture. Additionally, ranches within the BMD may not be able to support their current number of employees, which could have an adverse impact on local economies. Viability and sustainability of the ranches holding grazing permits within the BMD could decline in periods of prolonged drought, potentially affecting their way of life.

Changes in livestock grazing management practices (i.e., reduced grazing duration, change in season of use, targeted grazing of invasive, annual communities, etc.) under the Proposed Action would likely have minimal social and economic impacts to permittees or local economies within the BMD. Implementing changes in livestock grazing practices would not necessarily include a reduction in AUMs; therefore, minimal material, labor, or transportation cost would be incurred by permittees. It should be noted, however, that if a temporary change in kind or class of livestock is implemented to mitigate drought impacts, the BLM would assess a \$4.08/AUM surcharge (BLM WO IM No. 2012-070) if the permittee leases livestock.

If wild horses and burros were gathered under the Proposed Action, impacts to socioeconomics would be temporary in nature and would cease upon gather completion. These impacts would consist of hiring contractors to conduct the gather operations, and contributions to local economies/towns for food and lodging during gather operations. There would be no permanent changes in employment or population from the proposed action or alternatives. Removing wild horses and burros during drought would prevent additional degradation of rangeland resources thereby promoting rangeland sustainability and providing available forage resource to support wild horse and burro populations in the future.

2. Environmental Consequences of the Grazing Closure Alternative

Under this alternative, grazing closure of drought afflicted areas would likely result in short-term adverse impacts to grazing permittees. As referenced above, the cost to permittees to find alternative forage in Nevada is estimated at \$13.00 per AUM (BLM WO IM No. 2012-070) to place livestock on private pasture, which does not include labor, fuel, and equipment for hauling livestock if only distant pasture is available. The BMD currently authorizes permits for livestock grazing totaling 362,869 AUMs. Under this alternative, the projected annual cost to permittees to graze private land may total up to \$4,717,297.00 (assuming 2012 estimated rates). Additionally, the BLM BMD would not collect up to \$489,873.15 (for 2012 BLM grazing rates are \$1.35/AUM) annually in grazing fees from permittees. The cost of providing hay is variable based upon annual supply and demand, but is likely to be much higher than pasture.

Ranches within the BMD may not be able to support their current number of employees during periods of drought, which could have temporary adverse impacts on local economies. Viability and sustainability of the ranches holding grazing permits within the BMD could decline in periods of prolonged drought, potentially affecting their way of life.

Closing drought-afflicted areas to livestock grazing under this Alternative, however, would prevent degradation of rangeland resources and protect uplands and riparian areas during drought. This would have long-term beneficial impacts for livestock grazing permittees by providing for sustainable grazing management, which would in turn increase economic opportunities for livestock operations, help sustain livelihoods for the multiple families employed by these ranching operations, and foster more desirable social opportunities.

Continuing viable ranching operations would also enhance the economies of Esmeralda, Eureka, Lander, and Nye Counties through taxes and goods and services purchased by the ranches and people employed by these ranches. By maintaining viable ranching operations and protecting

rangeland conditions in the BMD, traditions associated with the ranching communities within the BMD would be maintained.

3. Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the DRAs contained within the Proposed Action and the Grazing Closure Alternative would not be implemented. No changes to the current livestock grazing and wild horse and burro management activities would be implemented.

Continuation of current livestock and wild horses and burros management during drought would likely lead to the degradation of upland and riparian health. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health could result in grazing allotments failing to meet rangeland S&Gs in the future. If S&Gs for rangeland health are not met, the BLM is mandated to implement changes to management activities so that rangeland "...are, or are making significant progress toward..." meeting rangeland health S&Gs (43 CFR § 4180, Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration). Additionally, the BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which could adversely impact affected permittees.

The No Action Alternative could also adversely affect permittees who are required to implement rangeland improvement projects so that degraded rangelands "...are, or are making significant progress toward..." meeting rangeland health S&Gs. Economic setbacks or other production limitations may greatly challenge the ability of livestock producers to remain viable. As previously stated, it would not be possible for BMD BLM to guarantee that every existing livestock permittee would survive as an economic unit or in a manner to which existing ranchers are accustomed in the event that BLM must cancel portions of or entire permits due to a failure to meet S&Gs.

L. Soils

Affected Environment

The extremes of climate, relief, aspect and geologic type combine to form a wide variety of soil types. Soils vary with differing parent materials, position on the landscape (landform), elevation, slope, aspect and vegetation. Soils range from those on the valley floors that are frequently deep, poorly drained and alkaline with a high salt content to shallow mountain soils formed over bedrock with pH levels near neutral.

Order 3 soil surveys have been completed for the counties within the BMD. The information obtained from these surveys is used in evaluating land-use potential, potential natural plant communities and developing reclamation and rehabilitation plans. Of the ten soil orders, most of the soils within the BMD are aridisols, mollisols, and entisols.

The soils in the valleys are mainly mineral soils of two types: those that do not have water continuously available for three months when the soil is warm enough for plant growth (Aridisols); and soils showing little evidence of the soil forming process, the development of

horizons or layers (Entisols). Aridisols dominate deserts and xeric shrub lands and have a very low concentration of organic matter. Water deficiency is the major defining characteristic of aridisols. Entisols accumulate on land surfaces that are very young (alluvium, mudflows), extremely hard rocks or disturbed material, mined land, highly compacted soils, or toxic material.

The mountains within the BMD consist of aridisols and entisols, and some deeper mineral soils with grass cover and a brown surface horizon (mollisols). Generally, entisols occur on steep mountain slopes where erosion is active. They also occur on flood plains and alluvial fans where new material is deposited. Aridisols and mollisols are older and occur on more stable alluvial fans and terraces.

Average annual soil loss varies across the BMD. Some soils exhibit high rates of erosion rates while others are expected to exhibit much lower erosion rates. In general, as disturbance increases and/or soil cover is reduced, soil loss increases compared to what is expected. Management actions which maintain or improve vegetation cover and reduce disturbance are expected to reduce the rate of wind and water erosion.

1. Environmental Consequences of the Proposed Action

Soil site stability is an important rangeland health attribute. Stability is important for soil biotic integrity and resistance to erosion. Under the Proposed Action, DRAs would be implemented to maintain vegetation within the BMD, which would minimize the potential for accelerated erosion events. A healthy, productive, and diverse plant community plays an important role in the improvement and/or maintenance of soil processes such as permeability and infiltration rates and soil site stability.

Dry soils usually encountered during drought are at risk of erosion. The erosion hazard during a drought is increased when prolonged grazing pressure has further reduced plant cover (Thurow and Taylor 1999). Inadequate plant cover can lead to substantial wind or water erosion of valuable top soil (Reece et al. 1991). Crusting of surface soils is another problem associated with low vegetation cover. When rain strikes exposed soil the particles are detached by the raindrop energy and are likely to lodge in the remaining soil pores, making them smaller or sealing them completely resulting in a crust (Thurow and Taylor 1999). This reduces water infiltration and increases erosion potential. Standing dead vegetation and litter reduce the impact of raindrops and promotes water infiltration. Soil cover also inhibits crusting by reducing raindrop impact; thereby, reducing water erosion (Gates et al. 2003). The prevention of accelerated erosion depends on the ability to respond to reduced vegetative growth quickly, so that adequate plant and litter cover remain (Reece et al. 1991). The Proposed Action would provide for prompt detection of drought conditions through the DDMP. The triggers defined in the plan would be used to activate the DRAs described in the Proposed Action. These actions are designed to promote proper utilization of vegetation by livestock and wild horses and burros within the BMD. As stated earlier, proper utilization would provide for adequate cover needed for soil protection during drought. The specific DRAs selected would depend on the situation. Forage and water conditions would be assessed and monitored using the DDMP referenced in the Proposed Action.

A majority of the DRAs are intended to improve livestock and/or wild horse and burro distribution and prevent the over grazing of vegetation during drought. DRAs aimed at improving distribution include temporary range improvement projects, change in livestock management practices and temporary change in kind or class of livestock. The remainder of the actions brought forward would be used to address timing and duration of grazing and adjust stocking rates to match forage and water supplies. These include change in season of use, change in grazing duration, partial reduction in AUMs, partial closure of an allotment(s), and wild horse and burro removal.

Actions designed to improve distribution would limit soil erosion by ensuring grazing pressure is distributed across an allotment(s) or HMA(s). Temporary range improvement projects such as water hauls, above ground pipelines or electric fences would result in a temporary congregation of livestock and/or wild horses and burros within certain areas (i.e., the immediate area near the improvement). The congregation of livestock and/or wild horses and burros near temporary rangeland improvements could lead to an increase in soil compaction, a reduction in vegetative cover and an increased potential for soil erosion. However, the use of temporary range improvement projects would improve the overall distribution of livestock and/or wild horses and burros. This would limit the overuse of vegetation by evenly distributing grazing pressure across and allotment(s) or HMA(s). Proper utilization of vegetation, especially during drought is needed to provide adequate vegetative cover needed to reduce soil erosion. Temporary electric fences could also be used to exclude livestock from critical areas such as riparian areas, meadows, critical areas for wildlife or areas where soil erosion is likely.

Livestock and wild horse and burro use around temporary improvement projects would be monitored. Once the aforementioned utilization triggers are met, livestock and the temporary range improvement projects would be removed from the area. In circumstances where wild horses and burros are the primary grazers, conditions would be assessed to determine if an adequate amount of forage and water remain to support the animals. The use of temporary range improvement projects would only be used when it is determined that adequate forage resources exist to allow for continued grazing of an area in a manner that would not further impact rangeland resources.

DRAs that address the timing and duration of grazing would ensure that grazing occurs at the appropriate time and for the appropriate duration during drought. Reduction of AUMs would adjust livestock grazing to a level consistent with available forage and water supplies. Changing the season of use can reduce adverse grazing impacts during drought; adjustments would be made according to the availability of water and forage and rangeland condition. In most areas, shifting the season of use to a time outside of the critical growth period would allow forage plants to take full advantage of available soil moisture and nutrients. Allowing plants the opportunity to grow unimpeded would increase ground cover and reduce soil erosion.

Reductions in grazing duration are often needed during drought to protect rangeland resources from degradation. Grazing durations, as currently permitted, may result in plants being grazed multiple times. Plants that are grazed repeatedly may have little or no opportunity to regrow between successive defoliations and may become stressed (Howery 1999). Reduced grazing

durations would provide for an increased amount of rest for plants already stressed by drought and, thereby, increase ground cover and protection from soil erosion.

Targeted grazing of cheatgrass and other non-native annual species could be used to provide forage while providing rest for native species and reduce undesirable plants and hazardous fine fuels. Annual bromes such as cheatgrass can provide a valuable forage resource under drought conditions (Reece et al. 1991). Targeted livestock grazing on monotypic annual communities can help reduce fire hazards by disrupting fine fuel continuity and reducing fuel loads (Peischel and Henry 2006). According to Reece et al. (1991), moderate defoliation of annual species can enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion. This would reduce the risk of soil erosion by increasing perennial plant cover.

Partial reduction in AUMs, partial or complete closure of an allotment, and/or wild horse and burro removal are all intended to balance animal stocking rates with forage supply and water availability. As stated before, drought often results in a reduction of forage and water resources. If it is determined that forage and/or water supplies are insufficient to meet livestock and/or wild horses and burros needs, temporary AUM reductions may be implemented. DRAs that improve livestock and/or wild horse and burro distribution are only viable when adequate forage and water resources exist within an allotment or HMA; therefore, when resources are insufficient to meet livestock and wild horse and burro needs, continuation of pre-drought stocking rates would result in overutilization of plants and an increase in soil erosion.

During wild horse or burro drought gathers, direct impacts such as soil displacement and compaction would occur at trap sites (less than 1 acre in size). Trap sites are ideally located in areas previously disturbed. Precautions would be taken during the gather to limit the impacts to soils during gather operations (refer to Attachment 2 for Gather Plan and SOPs).

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would provide rest for all areas afflicted by drought. Resting these areas would provide vegetation an opportunity to take full advantage of available soil moisture and nutrients without interruption. This would ensure adequate cover remains and the potential for soil erosion would be reduced. Grazing closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and provide one growing season of rest for plant recovery following the cessation of the drought.

3. Environmental Consequences of the No Action Alternative

Wind velocity and its potential to detach and transport dry soil, exponentially increases as vegetation cover is reduced (Marshall 1973). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka and White 1986). Protection of range plants during drought years allows for quick recovery following a drought (Howery 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to periods of drought. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse and burro use. The No Action

Alternative would negatively impact soils resources within the BMD due to an increased likelihood of erosion.

M. Vegetation (Including Special Status Species)

Affected Environment

Dominant Vegetation Communities

The following description of dominant vegetation communities occurring within the BMD has been adapted from information provided by Weisberg (2010).

The geography and rugged topography within the BMD have given rise to a diversity of vegetation types. Mojave Desert vegetation dominates the southern portion of the BMD. Great Basin vegetation occupies the northern part of the district, which is characterized by high, sagebrush-dominated valleys and numerous mountain ranges with the boundary between these two main ecological zones occurring roughly between Goldfield and Beatty. The Mojave Desert is known for extremely hot summers, but it has cool winter temperatures. The Great Basin is considered a “cold desert” because of its snowy winters, although summers can be quite hot and dry.

Mojave Desert

Much of the Mojave Desert is dominated by creosote bush (*Larrea tridentata*), a widely distributed shrub with olive-colored foliage that is resinous and exudes a strong creosote odor. Creosote bush occurs with white burrobush (*Ambrosia dumosa*) on deep, sandy soils and with shadscale (*Atriplex confertifolia*) on shallower soils. The shallow soils often have “desert pavement” on the surface or are underlain by caliche (hard layers of calcium carbonate that are nearly impervious to water penetration). At higher elevations, creosote bush diminishes, and blackbrush (*Coleogyne ramosissima*) becomes more abundant.

The overall structure of Mojave vegetation is dominated by desert shrubs, generally of short to medium height and somewhat evenly spaced. However, other plant life forms are important including grasses, herbaceous flowering plants, succulent (water-storing) species such as cacti and yucca, and even some trees. Many annual plant species in the Mojave emerge only in years with strong winter rains (winter annuals) or summer rains (summer annuals), causing the “desert to bloom” during irregular, favorable periods. Annual plants germinate, grow to reproductive maturity, flower, set seed, and die within a single growing season. Some annual plant species in the desert complete their entire life cycles in 6-8 weeks or less (desert ephemeral species), thus avoiding the hot temperatures of the summer months.

Desert Oases (Riparian Zone)

Desert oases surround spring-fed pools or occur where groundwater is sufficiently close to the surface. Such ecosystems do not suffer the same water limitations as the surrounding landscape and so include a diversity of plant species not found elsewhere. Tree species include screwbean

mesquite (*Prosopis pubescens*), western honey mesquite (*Prosopis glandulosa*), velvet ash (*Fraxinus velutina*), several willow species including *Salix exigua* and *Salix gooddingii*, and Fremont's cottonwood (*Populus fremontii*). Woodland, wet meadow, marsh, and shrub thicket plant communities occur in complex mosaics, and due to the vast distances separating many desert spring ecosystems, often include species that have evolved or persisted in isolation and occur nowhere else (endemic species).

Joshua Tree

The Joshua tree (*Yucca brevifolia*), is an unusual member of the lily family that grows to 30 feet in height and occurs in extensive, open stands, grows on high alluvial fans and marks the transition zone between the Mojave and Great Basin deserts. Its northernmost occurrence is in the vicinity of Goldfield, although it reaches its greatest abundance far to the south.

Great Basin

Nevada's other important vegetation types are characteristic of the Great Basin and vary according to elevation zone. Rainfall increases and temperature decreases with increasing elevation from valley bottom to mountain peak. In an average year, many of BMD's higher mountain ranges are covered in snow all winter, while many valley bottoms are snow-free for much of the season. The distribution of plant species tracks these climatic differences, resulting in a similar zonation of vegetation types in the various mountain ranges. For simplicity, the Great Basin's vegetation zones can be lumped into several distinct types: Salt Desert (Shadscale Zone), Sagebrush Grassland, Pinyon-Juniper Woodland and Mountain Shrub. Salt Desert and Sagebrush Grassland are characteristic of valley bottoms.

Salt Desert Shrub

Salt Desert is most prevalent in the low, saline valleys. In the poorly drained playas characteristic of this vegetation type, the water table fluctuates periodically. This results in the development of a salty crust on the surface, as well as extensive wind erosion during dry periods. Plant species that occur in the Salt Desert, such as shadscale and greasewood (*Sarcobatus vermiculatus*), are well adapted to high salt levels and drought conditions. Although there is more biodiversity than what is always apparent to the observer, the general aspect of this vegetation type is one of uniformity, as it is dominated by low, nondescript shrubs that are often spiny and of a greenish-gray hue. Vegetation cover is typically only about 10–15% of the ground surface.

Sagebrush Grassland

At somewhat higher elevations and on well-drained soils, Salt Desert transitions into Sagebrush Grassland. Shrubs here are taller and less spiny than in the Salt Desert zone, and vegetation cover is typically 15–40%. Annual precipitation of at least eight inches is typically required to support this vegetation type. Dominant shrub species include big sagebrush, low sagebrush (*Artemisia arbuscula* var. *arbuscula*), black sagebrush (*Artemisia arbuscula* var. *nova*), *Ephedra* species, antelope bitterbrush (*Purshia tridentata*), spiny hopsage (*Grayia spinosa*), desert

gooseberry (*Ribes velutinum*), snowberry, (*Symphoricarpos* spp.), littleleaf horsebrush (*Tetradymia glabrata*), and rabbitbrush (*Chrysothamnus* spp.). Also important in the Sagebrush Grassland are a variety of forbs (flowering herbaceous plants) and perennial bunchgrasses such as Great Basin wild rye (*Leymus cinereus*), squirreltail (*Elymus elymoides*), needle-and-thread (*Heterostipa comata*), and Indian rice grass (*Oryzopsis hymenoides*). Such grasses are referred to as “perennial” because plants survive over multiple seasons, and with proper management, they can develop deep root systems for surviving drought.

The balance between shrub and grass dominance in the Sagebrush Grassland zone depends upon the timing and overall amount of precipitation, land use history, and grazing practices. More abundant precipitation favors bunchgrasses, particularly if it occurs as rainfall in summer months (i.e., a more monsoonal climate). Over-grazing favors shrubs of low palatability, such as big sagebrush and can lead to an increase in bare ground.

Invasion by exotic plant species such as cheatgrass (*Bromus tectorum*) is also prevalent in this vegetation zone and can be exacerbated by overgrazing. Because it dries out in early summer and becomes highly flammable, cheatgrass changes the fire frequencies in sagebrush communities from 50 or more years to 10 or fewer years between burns. After a few fires, slow-growing, fire intolerant shrubs are eliminated, perennial grass species decline, and a cheatgrass monoculture becomes established. Such a vegetation type is of little use to wildlife, wild horses and burros or livestock.

Riparian Zones

The mountain ranges of the Great Basin are dissected by innumerable canyons, which often contain Sagebrush Grassland vegetation at their bottoms. Riparian plant communities occur where perennial streams flow through canyon bottoms. Such communities may be dominated by grassy meadows, shrubs, or trees, depending upon the physical setting, geology, flood regime, and history of human disturbance characteristic of a particular canyon. Narrow stringers of flood-adapted tree and shrub species occur along steep, confined reaches. Stately groves of quaking aspen (*Populus tremuloides*) and narrowleaf cottonwood (*Populus angustifolia*) can be found in deep canyons of some of the mountain ranges within the BMD. Common shrubs of the Great Basin riparian zone include water birch (*Betula occidentalis*), wild rose (*Rosa woodsii*) and several willow species (*Salix* spp.) Finally, geomorphic features such as debris fans sometimes create areas of elevated water tables in the riparian zone, giving rise to springs and wet meadows dominated by graminoids (grasses, sedges and rushes).

Pinyon-Juniper Woodland

Above the canyon floors lies the Pinyon-Juniper Woodland, often a broad belt that begins at the margin of mountain and valley and extends upwards to approximately 7000 feet in elevation. Development of substantial tree cover generally requires annual precipitation of at least 12 inches. This zone is typically a complex mosaic of shrub- and tree-dominated patches, intergrading into mountain shrub communities at higher elevations and on north-facing aspects. Dominant tree species are singleleaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*).

Mountain Shrub

Many of the mountain ranges within the BMD lack subalpine forest vegetation. Instead, Pinyon-Juniper Woodland gives way to a diverse Mountain Shrub community at higher elevations and on moister sites. The Mountain Shrub community occurs as a band above the cold tolerance limit of pinyon and juniper, over extensive areas in the BMD between 7,500 and 10,000 feet in elevation. Mountain big sagebrush (*Artemisia tridentata* subsp. *vaseyana*) dominates mountain shrub communities together with a diverse mixture of other shrub species, grasses, and flowering herbaceous plants. Many important shrub species in this vegetation type are members of the rose family, including bitterbrush, cliffrose (*Purshia mexicana* var. *stansburiana*), western serviceberry (*Amelanchier alnifolia*), dwarf ninebark (*Physocarpus alternans*), western chokecherry (*Prunus virginiana* var. *demissa*), and wild rose. Interspersed within the montane sagebrush grassland are patches of curleaf mountain mahogany (*Cercocarpus lediofolius*) along ridge tops and groves of quaking aspen in canyon bottoms and bedrock hollows.

Lower temperatures and higher precipitation allow the mountain shrub communities to be much more productive than structurally similar sagebrush communities at lower elevations. As a result, they provide abundant forage for a great number of animal species. Mule deer, pronghorn, bighorn sheep, and elk undertake seasonal migrations up the mountains in summer and early fall where they concentrate their foraging activities in mountain shrub communities. Several of the shrub and tree species (bitterbrush, cliffrose, mountain mahogany, aspen) are preferred mule deer food sources.

Special Status Species (SSS)

In addition to federally listed species, BLM also protects by policy (see BLM Manual 6840), other special status plant species, most notably species designated as “sensitive” by the Nevada BLM State Director. Table 6 identifies those sensitive plant species for the BMD.

Table 6: BMD SSS Plants

Scientific Name	Common Name
<i>Astragalus uncialis</i>	Currant milkvetch
<i>Arabis falcifructa</i>	Elko rockcress
<i>Asclepias eastwoodiana</i>	Eastwood milkweed
<i>Epilobium nevadense</i>	Nevada willowherb
<i>Eriogonum anemophilum</i>	windloving buckwheat
<i>Parthenium ligulatum</i>	ligulate feverfew
<i>Penstemon tiehmii</i>	Tiehm beardtongue

The BLM Nevada also protects plants listed by the State of Nevada as critically endangered. Two critically endangered plants occur on the BMD: Monte Neva paintbrush (*Castilleja salsuginosa*) and Williams’ combleaf (*Polycytenium williamsiae*).

1. Environmental Consequences of the Proposed Action

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka and White 1986). Rangeland conditions and vegetation types vary throughout the BMD. Differences in vegetation communities and the condition of those communities would determine their ability to withstand drought. The Proposed Action defines drought response triggers for each major vegetation community known to occur within the BMD. The utilization triggers were developed using the utilization guidelines proved by Holechek et al. (1988) and would be used to activate DRAs to ensure that proper utilization occurs for each vegetation type within the BMD.

The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). The DRAs described in the Proposed Action would implement management strategies aimed at limiting the impacts of livestock and wild horses and burros on vegetation including special status species during drought. These actions would be implemented in combination or separately once drought response triggers are met.

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and drought compounds the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). Many of the DRAs described within the Proposed Action are designed to improve livestock distribution and prevent the overuse of vegetation during drought. DRAs aimed at improving livestock distribution include temporary range improvement projects, change in livestock management practices and temporary change in kind or class of livestock.

Temporary range improvement projects such as water hauls, above ground pipelines or electric fences would result in a temporary congregation of livestock and/or wild horses and burros within certain areas (i.e., the immediate area near the improvement) but would improve the overall distribution of livestock and/or wild horses and burros. This would limit the overuse of vegetation by evenly distributing grazing pressure. Livestock and wild horse and burro use around temporary improvement projects would be monitored. Once the aforementioned utilization triggers are met, livestock and the temporary projects would be removed from the area. In circumstances where wild horses and burros are the primary grazers, conditions would be assessed to determine if an adequate amount of forage and water remain to support the animals. The use of temporary water hauls and/or temporary above ground pipelines would only be used when it is determined that adequate forage resources exist to allow for continued grazing of an area in a manner that would not further impact rangeland resources. Temporary electric fences would facilitate targeted grazing within monotypic annual plant communities. Temporary electric fences could also be used to exclude livestock from critical areas such as riparian areas, meadows, critical areas for wildlife or areas where sensitive plant species are likely to occur.

Changes in livestock management practices such as strategic placement of salt and/or mineral supplements increased herding and concentrating livestock into a single herd can be used to improve livestock distribution. Strategic placement of low moisture blocks is effective in attracting cattle to graze high and rugged rangeland (Bailey et. al 2008a). Low-stress herding is effective in focusing grazing in an area that typically receives little grazing use (Bailey et. al 2008b). Bradford (1998) observed that managing with a single herd strongly affects livestock distribution and grazing patterns. It was found that “bunching” the cattle created a more even utilization pattern and resulted in cattle moving into areas that had not been used before.

A temporary change in kind or class of livestock can provide opportunities to improve livestock distribution and protect vegetation from over utilization. Yearling cattle utilize pastures more uniformly over variable terrain than cows with calves or mixed classes; cows and calves utilize forages nearest the water much more heavily than yearlings (Volesky et al. 1980). Selecting yearlings would improve grazing distribution and limit impacts to riparian areas. Choosing a different kind of livestock would also affect how a range can be utilized. With their large mouths, cattle and horses may not select annual grasses as readily as sheep or goats because livestock prefer plants they can eat quickly and efficiently. Sheep or goats can get a full bite of annual grasses more easily than cattle or horses, especially when annual grass plants are small (Peischel and Henry 2006). Sheep and goats can be herded more effectively which allows for greater control and provides an opportunity to limit impacts to critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat etc.

During drought, growth slows and plants should be rested longer (Hanselka and White 1986). A significant impact of drought on rangelands is a severe reduction in herbage production (Bedell and Ganskopp 1980). DRAs that address timing, duration and stocking rate have been developed. These include change in season of use, change in grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), and wild horse and burro removal from drought afflicted areas.

Changing the season of use in which livestock are grazed can reduce grazing impacts during drought. Excessive removal of plant material during the growing season reduces root growth and replacement; thereby, reducing a plant’s ability to harvest solar energy and soil moisture needed for maintenance and growth (Howery 1999). The specific season of use chosen would be fitted to the situation at hand. In most areas, shifting the season of use to a time that is outside of the critical growth period would allow forage plants to take full advantage of available soil moisture and nutrients. Plants can then be grazed after sufficient growth or dormancy occurs. In areas dominated by cheatgrass, spring grazing and/or fall grazing may be appropriate to take advantage of the annual forage while it is green.

Reductions in grazing duration are often needed during drought to protect rangeland resources from degradation. Grazing durations, as currently permitted, could result in plants being grazed multiple times. Plants that are grazed repeatedly may have little or no opportunity to regrow between successive defoliations and may become stressed (Howery 1999). Reduced grazing durations would provide for an increased amount of rest for plants already stressed by drought and lead to an increase in ground cover and protection from soil erosion.

Targeted grazing of cheatgrass and other non-native annual species could be used to provide forage while providing rest for native species and reduce undesirable plants and hazardous fine fuels. Annual bromes such as cheatgrass can provide a valuable forage resource under drought conditions (Reece et al. 1991). Targeted livestock grazing can help reduce fire hazards by disrupting fine fuel continuity and reducing fuel loads (Peischel and Henry 2006). According to Reece et al. (1991), moderate defoliation of annual species can enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion.

Partial reduction in AUMs, partial closure of an allotment, and wild horse and burro removal are all aimed at matching stocking rates to forage supply and water availability. Drought often results in a reduction of forage and water resources. If it is determined that forage and/or water supplies are not sufficient to provide for livestock and/or wild horses and burros, temporary AUMS reductions could occur. DRAs aimed at improving livestock and/or wild horse and burro distribution are only viable when adequate resources exist within an allotment or HMA. A continuation of current stocking rates would result in overutilization of plants and degradation of rangeland resources. Heavy use of plants during drought results in permanent damage and high death loss of forage plants (Hanselka and White 1986).

2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would provide rest for all areas afflicted by drought. Resting these areas would allow vegetation to take full advantage of available soil moisture and nutrients without interruption. Protection of range plants during drought years allows for fast recovery following a drought (Howery 1999). The Grazing Closure Alternative would remove livestock grazing from the public lands to eliminate the adverse impacts of grazing during the drought and provide one growing season of rest for plant recovery following the cessation of the drought.

The Grazing Closure Alternative would not provide for the targeted grazing of invasive annual species and would limit the BLM's opportunity to reduce the vigor of invasive species that may compete with native vegetation. Closing drought-afflicted areas to livestock grazing under this Alternative would prevent degradation of rangeland resources and protect upland and riparian vegetation communities as well as sensitive plant species during drought. This would have long-term beneficial impacts to vegetation within the BMD.

3. Environmental Consequences of the No Action Alternative

"It is obvious that when it comes to drought, it is not a question if drought will occur, but rather when it will occur, how long will it last, and are we prepared?" (Howery 1999). Drought or water stress affects virtually every physiological and biochemical process in plants (Hanselka and White 1986). Grazing management practices before, during, and following a drought would influence the ability of native rangeland vegetation to recover (Encinias and Smallidge 2009). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurow and Taylor 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought. Livestock and wild horse and burro use would be concentrated around remaining water sources and riparian areas.

This would result in an uneven or patchy distribution of grazing pressure with areas of heavy use, leaving other areas far from water unused. As stated earlier, drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use. The No Action Alternative would negatively impact vegetation resources within the BMD directly affecting the present condition and limiting the ability of vegetation to survive and recover from dry periods in future years. Unsustainable range use can cause an increase in the frequency and consequences of drought (Thurow and Taylor 1999). Hanselka and White (1986) found that weakened root systems affect the ability of plants to pull moisture from the soil and that closely grazed plants will permanently wilt when there is still 6-8 percent moisture in the soil.

N. Wild Horses and Burros

Affected Environment

The BMD administers 28 Herd Management Areas (HMAs) encompassing over 3 million acres of public lands. The MLFO administers 12 HMAs, and the TFO 15 HMAs, while three others are administered by adjoining BLM Offices (see Map 3). HMAs within the BMD range in size from 11,500 acres to over 407,000 acres. The MLFO and TFO also cooperatively manage several US Forest Service Wild Horse Territories (WHTs). The 2012 estimated population within the BMD is approximately 3800 wild horses and 360 wild burros.

HMAs are land areas designated for the long-term management of wild horses and/or burros. Many HMAs encompass mountain ranges and include mountain shrub, meadow, mahogany, pinyon and juniper vegetation types interspersed with perennial streams and springs. Wild horses and burros also use sparsely vegetated, rocky mountains with limited water. Winter habitat typically consists of valley bottoms and lower elevations that may support winterfat or other salt desert shrub vegetation. The primary vegetation types used by wild horses consist of Wyoming or mountain big sagebrush with an understory of perennial grasses. Wild burros are able to thrive in more desert type conditions than wild horses. Wild horse and burro populations generally move throughout or between HMAs in response to forage and water quantity, precipitation, temperature and other factors that change seasonally. Competition resulting from increased populations will also influence wild horse and burro movement within and/or between HMAs.

In drought years, reduced winter snow and spring precipitation limits the recharge of springs and streams, as well as the overall availability of water to wild horses or burros. HMAs vary widely in their abundance and productivity of water sources. Some HMAs have many productive water sources available that are marginally impacted by drought. Other HMAs have few water sources or water sources that are more reactive to drought. The number and productivity of waters in relation to the population of wild horses or burros is an important consideration as well. Effects from drought in HMAs that are overpopulated and support limited waters would be more substantial when compared to HMAs with normally plentiful water and populations at AML.

Wild horses and burros travel between water sources and foraging areas. They can usually travel several miles back and forth from water and forage. During drought years, forage productivity

can be a fraction of normal. In areas where forage is limited and/or wild horses or burros are overpopulated, animals have to move increasing distances from water to obtain adequate forage and go into less desirable areas that support lower quality forage. In general, wild horses and burros are very resilient and adaptable animals with a metabolism that has evolved to allow them to survive and thrive in poor quality habitat (compared to their domestic counterparts). These wild animals are typically in top physical condition, have strong bones and hooves and rarely succumb to ailments that plague domestic horses. Wild horses and burros typically do not begin to show signs of body condition decline until the habitat components are severely deficient. Once the decline begins, their health deteriorates rapidly. As the resources are consumed, and travel distances become longer the animals deteriorate in body condition. Burros are able to utilize brush and other browse and lesser quality forage and maintain better body condition than wild horses during drought conditions. Burros are also able to survive with less water and less frequent visits to water. Therefore, emergency situations in burro HMAs are less likely, but do still occur under severe drought conditions especially when coupled with large numbers of animals.

The health of the range and the recovery of the vegetation and waters from drought are also concerns. With reduced productivity of rangeland forage plants, the existing population of animals can cause excessive utilization of the range especially where the HMA supports larger concentration of animals or in HMAs populations of wild horses above the AML. Wild horses and burros also cause damage through excessive trailing and hoof action, which causes destruction of vegetation and increases erosion and trampling of riparian areas; thereby, causing bank shear, contaminating water quality and affecting riparian function.

The majority of wild horse foals are born annually between March 1 and July 1. Throughout the BMD, populations increase by 10-22% annually. Burros may foal year-round, yet burro populations may not increase at the same rates as wild horses.

Wild horses and burros are a long-lived species with documented survival rates exceeding 92% for all age classes and do not have the ability to self-regulate their population size. Predation and disease have not substantially regulated wild horse or burro population levels. Throughout the BMD, there are few predators to control wild horse or burro populations. Some mountain lion predation occurs, but it is not believed to be substantial. Coyote are not prone to prey on wild horses unless young or extremely weak. Other predators such as wolves or bears do not exist.

The BMD has been collecting samples for genetic analysis since 2001. To date, most HMAs exhibit high genetic variability with no concerns for inbreeding.

The BLM is responsible for the protection, management and control of wild horses and burros on public lands in accordance with the WFRHBA as amended (Public Law 92-195 Act) which states that BLM, "...shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a TNEB on the public lands."

1. Environmental Consequences of the Proposed Action

A. Drought Response Actions

1. Livestock

The DRAs identified within the Proposed Action, were developed in order to reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The DRAs pertaining to livestock management would have minimal direct impacts to wild horses or burros. Actions implemented within HMAs would indirectly affect wild horses and burros. Temporary water hauls, or pipelines would improve distribution of livestock and wild horses and burros as well as reduce impacts to drought affected water sources. Additionally, the DRAs implemented within HMAs would indirectly affect wild horses and burros by reducing competition among wild horses or burros, wildlife and livestock as additional water sources would be available to offset the reduced water supply due to drought.

Changes in season of livestock use, grazing duration or livestock management practices would also result in indirect effects to wild horses and burros. The moderation of utilization levels, improvement of distribution and protection of forage resources from concentrated use would ensure the long term productivity and health of the range. The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). Therefore the aforementioned DRAs would also provide for quicker recovery from drought.

The DRAs also include reductions in livestock AUMs and the partial or complete closure of an Allotment(s). These actions, implemented either separately or in combination with other DRAs would help ensure that adequate forage and water are available for wild horses, burros and wildlife. Additionally, these DRAs would promote the recovery of rangelands affected by drought.

Other actions include temporary fencing, targeted livestock grazing of monotypic invasive annual communities and change of class of livestock, which would have minimal indirect effects to wild horses or burros, and would ultimately benefit forage and riparian resources both in the short and long term.

2. Wild Horse and Burro Drought Response Actions

Temporary Water Hauls

In order to augment water sources for wild horses or burros until an drought gather can be completed or until normal precipitation and water availability resume, temporary water hauls could be authorized at select locations within HMAs or at existing (but dry) water sources. Large 500 gallon or larger water trucks or trailers would be used to replenish waters in tanks, ponds or other available catchments. In most cases, existing roads would be used, and water haul tanks would be placed in disturbed locations following a cultural resources inventory. Where possible, supplemental water troughs would be placed on existing wild horse or burro

trails to encourage use. All water troughs would be equipped with bird ladders to protect avian species.

Minor soil disturbance would be expected depending upon the number of animals using the water source. No adverse impacts to wild horses or burros would be expected; however, temporary water hauls would help maintain animal health and aid in preventing death due to dehydration. The use of water hauls would continue until natural or developed water becomes available that is adequate to support the existing population, or a drought gather occurs to reduce the existing population to levels that can be sustained with the existing resources.

Wild Horse and Burro Removal

Removal of excess and drought affected animals would improve herd health and prevent widespread suffering and death of wild horses and burros. Decreased competition for remaining forage and water resources would reduce stress and promote healthier animals, as the actual population becomes balanced with available forage and water resources. Further deterioration of drought stressed rangeland and riparian resources would be avoided which would also promote range recovery (and healthy animals) over the long-term. The following discussion outlines the impacts of specific elements of gathers on wild horses and burros.

Helicopter Capture

The BLM has been gathering excess wild horses and/or burros from public lands since 1975, beginning in the Stone Cabin HMA, and using helicopter gather since the late 1970's. Appendix A of Attachment 2 includes information regarding methods that are utilized to reduce injury or stress to wild horses and burros during gathers. Since 2004, BLM Nevada has gathered over 26,000 excess animals. Of these, mortality has averaged only 0.5%, which is very low when handling wild animals. Another 0.6% of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective and practical means for the gather and removal of excess wild horses and burros from the range. BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs outlined in Appendix A of Attachment 2 would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impact or injury to the wild horses and burros. In their August 2012 BLM Task Force Report, the American Association of Equine Practitioners concluded that the care, handling and management practices utilized by the BLM are appropriate for this population of horses and burros and generally support the safety, health and welfare of the animals.

Over the past 35 years, various impacts to wild horses and/or burros from gathers have been observed. Individual, direct impacts include handling stress associated with the capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual and is indicated by behaviors ranging from nervous agitation to physical distress. Observations made through the completion of gathers show that the majority of the wild horses captured acclimate quickly to the holding corral environment, becoming accustomed to water tanks and hay, as well as human presence. Wild burros generally exhibit less agitation and are calmer

albeit resistant to handling. The BLM Wild Horse and Burro Specialists and the gather contractor and crew are very attentive to the needs of all animals captured during gathers, ensuring their health and safety.

Accidental death or the need to humanely euthanize animals as a direct result of gather activities is infrequent and averages less than one half to one percent of the animals gathered (0.5-1.0%). Injuries sustained during gathers could include nicks and scrapes to legs, face, or body from brush or tree limbs while being herded to the gather corrals by the helicopter. Rarely, wild horses or burros could encounter barbed wire fences and could receive wire cuts. These injuries are generally not fatal and are treated with medical spray at the holding corrals until a veterinarian can examine the animal. On some gathers, injuries to horses or burros occur more frequently due to animal temperament and/or body condition. However, on other gathers, no animals are injured or die.

Most injuries to horses and burros are sustained once the animal has been captured and occur within the gather corrals, holding corrals, or during sorting. These injuries result from kicks and bites or from collisions with corral panels or gates, and are less common in burro gathers because burros tend to act less aggressively. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting and then animals are moved into the large holding pens to settle in with hay and water. Injuries received during transport and sorting consist of superficial wounds of the rump, face, or legs. Occasionally, animals could sustain a spinal injury or a fractured limb which requires humane euthanasia but these injuries are rare. Similar injuries could be sustained if wild horses or burros were captured through bait and/or water trapping, as the animals would still need to be sorted, aged, transported, and otherwise handled following their capture.

During summer gathers, environmental conditions come into play as the temperatures are higher, roads and corrals dusty, and water more limited on the range. During times of drought, water could be greatly limited or nearly non-existent. Animals could have to travel long distances to find water, which may lead to animal dehydration or water stress. The exertion of a gather can exacerbate already debilitated conditions, leading to heat exhaustion or other complications. Wild horses may be located at higher elevations and in areas with dense tree cover during summer months, increasing the difficulty of the gather. The helicopter pilot, regardless of season, allows horses to travel slowly at their own pace. During gathers of drought affected animals, the pace would be slowed to allow weak or debilitated animals to travel to the trap corrals as a group. If necessary, crew members may be instructed to capture the animals by roping and loading the animals into stock trailers for transport in order to reduce the stress on the animals. Weak mares and small foals are especially vulnerable to drought stress and may become weak; therefore, extra care would be taken to ensure their safe capture and recovery.

Heat stress does not occur often but if it does, death may result. If wild horses or burros are in a weakened state due to a shortage of water or forage, higher mortality could occur. In these cases, the BLM would take extra precautions to ensure the safe capture and post-gather care of these animals. An Animal Plant Health Inspection Service (APHIS) veterinarian or other contract veterinarian would be available to examine animal condition and provide recommendations for care. Electrolytes may be added to the drinking water during summer gathers that involve

animals in weakened condition. Additionally, the BMD Wild Horse and Burro staff maintains a supply of electrolyte paste that could be administered to affected animals as needed.

The BLM and the contractor are also proactive in controlling dust in and around the holding facility and gather corrals. These areas are sprayed down to reduce dust and limit wild horse and burro exposure to dust during summer months. Additionally, moderate travel speeds on roads reduce dust exposure during transport. The horses and burros could be sprayed in an effort to reduce body temperature and improve overall comfort of the horses and/or burros. In cases of extreme heat, the gather operations would be suspended once high temperatures are reached. Temperatures vary across the BMD on a daily basis during summer months. During summer gathers, operations often conclude between noon and two pm, and can be suspended earlier if the COR deems it necessary to ensure animal health.

In rare cases, water toxicity or poisoning can occur when waters are extremely limited or non-existent, which can lead to cerebral edema and death. To prevent the occurrence of water poisoning, recently gathered animals may be held off of full water for some time until they have time to slowly become hydrated, at which time free access to water would be provided. Similarly, hay may be fed sparingly if there is a risk of colic or other complications due to the malnourished state of recently gathered animals.

Indirect individual impacts are those impacts that occur to individual animals after the initial stress event. These impacts, like direct individual impacts, are known to occur intermittently during gather operations. An example of an indirect individual impact would be a brief skirmish amongst older stallions following sorting and release into the stud pen. Fighting among jack burros during gathers is less common. Traumatic injuries usually do not result from these conflicts. Spontaneous abortion events among mares or jennies following capture is very rare. Observations following capture indicate the rate of miscarriage varies, but can occur in about one to five percent of the captured mares, particularly if the mares are in very thin body condition or in poor health.

Through the capture and sorting process, wild horses and burros are examined for health, injury and other defects. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals should be euthanized (refer to SOPs in Appendix A of Attachment 2). Animals that are euthanized for non-gather related reasons include those with old injuries (e.g., broken hip or leg) that have caused the animal to suffer from pain or prevents them from being able to travel or maintain adequate body condition; old animals that have lived a successful life on the range, but now have few teeth remaining, are in poor body condition, or are weak from old age; and wild horses or burros that have congenital (genetic) or serious physical defects such as club foot or sway back. During drought situations animals could be gathered that could be severely debilitated or emaciated and following examination, the APHIS could determine that the animal would unlikely recover and should be euthanized as a humane act of mercy.

It should be noted that drought gathers are not intended to be a mechanism to achieve TNEB or meet long-term management goals (e.g., managing healthy wild horse and burros within the productive capacity of the range). However, not all HMAs within the BMD are within their AML range. Additionally, extreme drought conditions could warrant action within HMAs that

are within their AML. It is the intent of BLM to intervene during drought or other emergencies to remove wild horses and burros if necessary, before body condition declines and animals become weak from starvation or dehydration.

Unless emergency conditions exist, the BLM does not gather wild horses by helicopter during the foaling season. (i.e., the six weeks before or after the peak of foaling (April and mid-May)). Most foals are born during the aforementioned period, however, it is not uncommon for a very small number of wild horse or burro foals to be encountered during any month of the year. If foals too young to wean are gathered, they are matched up with the dams. In summer months, young foals may be more prone to dehydration and complications from heat stress. Additionally, the handling, sorting and transport can be stressful for young animals; however, on-site BLM staff are attentive to the condition and needs of the animals and take precautions to limit stress.

Foals can sometimes be orphaned during a gather. This can occur if the dam rejects the foal; the foal becomes separated from its dam and cannot be matched up following sorting; the dam dies or must be humanely euthanized during the gather; the foal is ill or weak and needs immediate care that requires removal from the dam; or the dam does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the dam rejected it or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphaned foals. Veterinarians could administer electrolyte solutions to aid in hydration and overall health. Orphan foals could be fed milk replacer as needed to support their nutritional needs. Orphaned foals could be placed in a foster home to receive additional care. Despite these efforts, some orphaned foals could die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

Bait or Water Trapping

In cases where water is the most limiting factor, it may be practical to remove wild horses or burros through water trapping. The use of hay or supplement (a.k.a. bait) could also be used to trap animals targeted for removal due to drought conditions. Impacts of this method of removal are similar to impacts of helicopter gathers and include ground disturbance at the trap location, and minor displacement of wildlife. Traps would be placed on disturbed locations when possible after an archeological survey has been conducted. In the case of water trapping, pens would be placed around developed rather than natural water sources where possible to reduce impacts to riparian areas.

Water or bait trapping generally results in the capture of a few animals at a time, and requires lengthy time periods to gather larger numbers. Therefore, gather operations could be ongoing for many weeks or months to remove drought affected animals verses helicopter which would be accomplished in a matter of days. As a result, animals debilitated from lack of forage and water would persist for a longer time before being gathered and cared for properly.

Injuries to wild horses and burros through bait or water trapping are similar to those described for helicopter removals. Animals would not endure the excursion from being herded several miles to a trap location but may experience injuries associated with bites and kicks while in the trap, during loading into stock trailers and transportation to BLM preparation facilities. If foals

enter the trap with adult animals, they could become injured or killed by adult wild horses or burros fighting. Similarly, if adequate facilities did not exist to separate animals by sex or age, foals and adult animals could be injured or killed during transport in stock trailers.

Bait and water trapping would be accomplished through the gate cut method, and no wild horses or burros would be returned to the range. The effects would be similar to those described for gate cut removals below. Various removal strategies could be employed with the use of bait or water trapping as described in the section titled “Removal Numbers”.

Wild Horses and Burros Remaining (or Released into the HMAs following complete removal)

Following a wild horse or burro drought gather, deterioration of the range associated with wild horses or burros would be reduced and rangelands would have the opportunity to recover from the impacts of drought. Protecting rangeland resources from severe use during drought would improve sustainability and enhance resiliency so that rangelands can support future generations of healthy wild horses and burros. Goals of a drought gather would include: the management of wild horse populations in balance with the available forage and water resources and other rangeland uses, and allowing individual animals to better maintain optimum body weight and overall health during future drought years. This would lessen the potential for individual animals and/or herds to be affected by drought, and avoid or minimize the need for future emergency actions.

Depending upon the gather objectives, some wild horses or burros (whether escaped from capture or intentionally left undisturbed) would remain on the range following the gather. The wild horses or burros that are not captured may be temporarily disturbed and moved to another area during gather operations. Over the last 20 years, it has been proven that, with the exception of changes to herd demographics, direct population-wide impacts are usually temporary in nature and with most; if not all impacts to individual wild horses or burros disappearing within hours to several days after the gather is completed. No observable effects associated with these impacts would be expected within one month of release except for a heightened awareness of human presence.

Primary direct impacts to the wild horse or burro populations related to gather activities include changes to herd population dynamics, age structure and/or sex ratio, and subsequent changes to growth rates and population size over time.

Should it be determined that a drought gather is necessary, HMA-specific gather and removal objectives would be developed based on detailed environmental and animal conditions. This information would be included in the Decision issued prior to the gather commencing. Depending on the gather objectives, numerous outcomes would be expected. These are discussed by gather type below.

Gate Cut

Wild horses or burros would be gathered and removed as encountered until removal and post-gather population objectives were achieved. No wild horses or burros would be released so that

the number removed would equal the number gathered. The animals may be removed from specific portions of an HMA or Complex where resources are most limiting, leaving all animals in the remainder of the HMA alone. Only the drought affected animals would be gathered and exposed to the additional stresses of handling. This type of removal is most common during drought and emergency gathers, as it does not pose additional stresses on animals identified to remain on the range, and is the standard method used for burro gathers.

Wild horses or burros that are not gathered could be minimally impacted due to the helicopter activity but would otherwise be unaffected. All impacts would cease once gather operations were completed. Sex ratios and age distributions of the un-gathered population would be unknown but should be comparable to the ratios observed in the gathered animals and the impacts to the residual herd's health and distribution is difficult to predict.

Without the ability to selectively remove animals from the range by age, substantially more wild horses could be removed under a gate cut gather. These animals would likely be transferred to long-term pastures (LTPs Experience within the BMD shows that generally 40-50% of wild horse populations fall into age groups older than 5 years of age, for which there is little to no adoption demand).

Gate cut gathers eliminate the ability to remove wild horses and burros based on animal health or desirable or historical characteristics, which often results in unintended impacts to the remaining herds. For example, horses of larger size (draft), gentle disposition, or bright/light coloring are often easier to locate and capture. Therefore, they are typically the first to be removed using the gate cut method. This has the potential to permanently remove these genetic traits from herds. Additionally, utilizing the gate cut method could distort the distribution within an HMA by removing all animals concentrated in areas where capture is easiest, while leaving animals in the outlying areas that are more difficult to gather (e.g., areas of trees, rough terrain, or long distance from trap site). These areas are often times characterized by lesser quality habitat. In the case of drought gathers, the emphasis for gather and removal would be for the horses and/or burros that inhabit the areas in the worst condition and with the fewest resources to sustain them. In cases where it is feasible and appropriate, attempts would be made to gather animals equally across the HMA to avoid disproportionate removal.

Because no wild horses would be released back to the range, no adjustment to sex ratios or application of fertility control would take place. Wild horses would not be held at the holding corrals for extended lengths of time while waiting to apply fertility control, and horses would not be stressed by additional handling to apply fertility control. Fertility and foaling rates would be unaffected in the un-gathered population with the population increasing at an average rate of 17-19% per year.

Removal Numbers

Because site-specific data would be evaluated prior to conducting a drought gather, removal numbers would be detailed in the Decision. The following scenarios are provided for analysis:

Removal of sufficient numbers of animals to achieve the low range of AML

Under this strategy, only sufficient numbers of wild horses and/or burros would be removed to achieve the low range of AML for applicable, drought affected HMAs. This strategy is consistent with most gathers conducted throughout the District, where excess wild horses are removed to low AML and through the following years the population is allowed to increase to the high AML at which time another gather is scheduled. Most HMAs in the BMD have had gathers completed within the past 10 years. Comprehensive EAs, which analyzed environmental impacts of the gathers, were completed for each gather conducted. If it is determined that a drought gather(s) is needed, site-specific details would be provided in the Decision document for the drought gather(s).

Removal of sufficient animals to achieve the high AML

This strategy has also been analyzed in numerous gather EAs written by the BMD within the past 10 years. If the analysis of environmental and animal conditions trigger the need for a drought gather in a particular HMA, it may be determined that the population need only be reduced to the high AML in order to avoid emergency conditions and sustain the wild horse and burro populations during drought. Further gathers to achieve low AML would be scheduled based on additional monitoring data and through the BMD and State gather priority process. Impacts to wild horses or burros would be similar to those under the low AML gather option. Range impacts would be proportional to the residual wild horse and burro population. Impacts to rangeland health could be expected, primarily due to trailing and trampling of riparian areas. The level of impacts realized would vary depending on the health of the rangeland within the HMA(s).

Under this option, the established AML would be exceeded following spring foaling. If drought conditions persisted, rangeland health and post drought recovery could be hindered by overpopulation.

It is not expected that genetic health would be impacted under either the low or high AML options. Most wild horse herds sampled have high genetic heterozygosity, genetic resources are lost slowly over periods of many generations, and wild horses (and burros) are long-lived with long generation intervals (Singer, 2000).

Removal of animals to a point below the low AML

Removal of wild horses and/or burros to achieve a population below the low AML would occur when drought severely limits water and forage resources and animals need to be removed to prevent further suffering or death. HMA-specific data and animal health analysis would be used to estimate how many animals could be supported on the range, and where animals should be removed to ensure animal health and resource recovery.

In order to safeguard genetic variability of the animals remaining on the range, genetic analysis of the horses and/or burros within an HMA would be considered as well as known movement between HMAs. Due to the amount of animals that could be removed under this option, genetic

variability could be negatively impacted. However, the immediate welfare of the wild horses, burros and the habitat take precedence over the long-term genetic variability. Hair samples would be collected for genetic analysis, and should future analysis indicate that action is needed to enhance or maintain the genetic variability of the herd; a strategy would be developed to address the specific issues. Strategies may include introducing animals from one HMA into another.

AML would not be permanently adjusted. The population would be allowed to increase to the high AML before another gather was scheduled, as long as resource conditions and animal health allow.

Complete removal of all animals in an HMA

This option would be employed only under extreme circumstances and is, therefore, unlikely. However, it is analyzed here as a worst-case scenario. While it would be undesirable to remove all horses or burros from an HMA, the BMD conducted gathers in the mid-1990s to completely remove wild horses and burros from HMAs within Esmeralda County of the Tonopah planning area. Though complete removal was the objective, in some cases, wild horses and burros escaped capture and subsequently repopulated the HMAs.

The decision to remove all animals would be made after analysis of the environmental and animal data, and only done in order to prevent suffering of animals due to the absence of forage an/or water and reduce negative impacts to rangeland resources. It is possible that animals could be held in a contract facility until conditions recover and then be returned to the range. It may also be possible to gather animals and release them into another HMA that has adequate resources to support additional animals. The consequences of such a removal could be the elimination of an HMA and the need to revert the status back to a Herd Area. If it is determined that resources are adequate, the HMA could be repopulated in future years with horses or burros transplanted from another HMA.

Population Growth Controls (Fertility Control treatments and sex ratio adjustments)

Fertility control or sex ratio adjustments could be applied if conditions warrant the complete removal of all animals within an HMA and those animals are to be returned to the range after drought recover has occurred. Population controls would not be administered to burros. The following discussion analyzes the impacts of population control methods on wild horses:

Fertility Control

Fertility control would include the application of fertility control drugs to all mares released back to the range. All mares selected for release would be treated with a two-year Porcine Zona Pellucida (PZP) or similar vaccine/fertility control and released back to the range. Immuno-contraceptive (fertility control) treatments would be conducted in accordance with the approved standard operating procedures (SOPs, outlined in Appendix A of Attachment 2).

Each released mare would receive a single dose of the two-year PZP contraceptive vaccine. When injected, PZP (antigen) causes the mare's immune system to produce antibodies; these antibodies bind to the mare's eggs and effectively block sperm binding and fertilization (Zoo Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and can be easily administered in the field. In addition, among mares, PZP contraception appears to be completely reversible. The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner et. al, 1997). Available data from 20 years of application to wild horses contradicts the claim that PZP application in wild mares causes mares to foal out of season or late in the year (Kirkpatrick and Turner 2003). The PZP vaccine is currently being used on over 75 HMAs for the BLM and its use is appropriate for all free-ranging wild horse herds. The long-term goal is to reduce or eliminate the need for gathers and removals (Kirkpatrick et al. 2010).

The highest success obtained for fertility control has been achieved when applied during the timeframe of November through February. The efficacy for the application of the two-year PZP vaccine based on summer application (August through October) is as follows:

Table 7. Fertility Control Efficacy (Effectiveness)

Year 1	Year 2	Year 3	Year 4
Normal	80%	65%	50%

The PZP treatments would be controlled, handled, and administered by a trained BLM employee. Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term impact from the fertility control injections. Injuries through fighting and other behaviors may occur within the holding pens prior to release, but rarely result in death.

As the sole approach, contraception would not allow the BLM to maintain populations at AML; however, in conjunction with other techniques (e.g., removals of excess animals and adoption) and through incorporation of other population control techniques (e.g., sex ratio adjustments, sterilization), it now provides a valuable tool in a larger, adaptive management approach to wild horse management.

Contraception may be a cost effective and humane treatment to employ in horses to prevent increases in populations, or with other techniques, to reduce horse populations (Bartholow 2004). In general, contraception would not remove horses from an HMA's population which would result in some continuing environmental effects by those individuals. Horses are long-lived reaching 20 years of age in the wild and those horses returned to the HMA could continue exerting, throughout their life span, negative effects on the environment as described above, as opposed to the removal of a horse. Contraception, if effective, reduces future reproduction. Limiting future population increases would limit increases in environmental damage from higher densities of wild horses. It could also reduce the effect of wild horse gather activities on the

environment (if it limits the numbers of wild horse gathers required). If application of contraception to wild horses requires capturing and handling horses, the risks and costs associated with capture and handling of horses may be roughly equivalent (not counting the cost of adoption). Application of contraception to older animals and returning them to the HMA may reduce risks associated with horses that are difficult to adopt or handle in captivity.

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in three populations of wild horses, which is consistent with Powell's (1999) findings in another population. Likewise, body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of four wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior after receiving contraceptives (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown. Kirkpatrick et al. (2010) conclude by stating that "the larger question is, even if subtle alterations in behavior may occur, this is still far better than the alternative" and that the "other victory for horses is that every mare prevented from being removed, by virtue of contraception, is a mare that would only be delaying her reproduction rather than being eliminated permanently from the range. This preserves herd genetics, while gathers and adoption do not." (Kirkpatrick and Turner 2002, 2008; Turner and Kirkpatrick 2002, 2003; Willis et al. 1994.)

Population-wide indirect impacts are more difficult to quantify and would occur over time. A large percentage of inoculated mares would experience reductions in fertility. Recruitment of foals into the population would be reduced over a two-year period. Any multi-year reprieve from foaling would increase overall health and fitness of the mares, as well as the health of the foals born after fertility returns, particularly during times of drought or other environmental stress.

Following resumption of fertility, the proportion of mares that conceive and foal could be increased (rebound effect) due to the increased fitness. Additionally, fertility control treatment could cause breeding and foaling seasons to become "out of sync" with foals born earlier or later in the year, or throughout the year but is generally associated with the timing of the treatment and not the vaccine itself. These effects are based on anecdotal information, and currently undocumented through studies. Research is continuing to document and quantify these effects.

Application of fertility control (and/or adjustment of sex ratios to favor stallions) could increase the intervals between future gathers, and reduce disturbance to individual animals as well as to the herd social structure over the foreseeable future when compared to a gather without implementation of either population growth control method. The BLM could return to these areas every 2-3 years to re-apply fertility control in order to maintain its effectiveness in controlling population growth rates. By completing follow-up gathers on a regular basis (every 2-3 years) in future years, it is possible that the population control measures may be adequate to maintain the population within the existing AMLs if implemented successfully, with the need to remove few if any wild horses from the range. As a result, few horses would need to be removed that might ultimately be held in long term pastures or entered into the sale program as the adoption demand comes into line with the number of excess wild horses removed from the range.

PZP can safely be repeated in 2 years or as necessary to control the population growth rate. The probability of long-term infertility using PZP is very low, and many mares retreated even after 3 years will return to normal fertility after the second treatment wears off.

Fertility control application would allow the average population size to be maintained at a level consistent with the AML. Reduced population growth rates and smaller population sizes would also allow for improvements to range condition, which would have long-term benefits to wild horse habitat quality and contribute to the achievement and maintenance of a TNEB. This would also improve the recovery of the range from the effects of drought as the population grows more slowly and has fewer impacts on the vegetation, waters and other resources, than would occur without the application of population controls.

Sex Ratio Adjustment

Should population controls be applied to animals released to the range, sex ratio adjustments could be included as a management option in wild horse herds, but not burro herds. Wild horses would be released to increase the post-gather sex ratio to favor stallions in the remaining herds. Stallions would be selected to maintain a diverse age structure, herd characteristics and body type (conformation). Adjustment of sex ratios to favor stallions would be expected to have relatively minor impacts to overall population dynamics. Impacts of additional stallions in the population could include: decreased band size, increased competition for mares, and increased size and number of bachelor bands. These effects would be slight, as population ratios of 60% stallions to 40% mares are not considered extreme departures from natural sex ratios. Ratios above 60% would be expected to increase fighting among studs, which would be a consequence of removing additional mares in order to prevent widespread death and suffering. Conversely, a selection criterion, which leaves more mares than stallions, would be expected to result in fewer and smaller bachelor bands, increased reproduction on a proportional basis with the herd, and larger band sizes. With more stallions involved in breeding it should result in increased genetic exchange and improvement of genetic health within the herd.

Modification of sex ratios favoring stallions could also reduce growth rates and subsequent population size, as a smaller proportion of the population would consist of mares that are capable of giving birth to foals. As a result, gather frequency could be reduced as well as the number of horses gathered and removed in future gathers.

It is well accepted that wild stallions maintain body condition and muscling better than wild mares when resources are limiting. This is most often observed during gathers where the population is very high in comparison to the AML and forage or water are lacking. In these cases, mares with suckling foals or young mares 3-4 years of age are often very thin with Henneke Body Condition Scores of 2 or 3. In such cases, it may be possible to release additional stallions (rather than thinner mares) that otherwise would have needed to be held in LTPs, thus leaving a larger population on the range, albeit at a higher proportion of studs.

Temporary Holding Facilities During Gathers

Wild horses or burros gathered would be transported from the gather corrals (a.k.a. trap sites) to a temporary holding corral within the HMAs primarily in goose-neck trailers; however, straight deck semi-trailers could be used. At the temporary holding corrals, animals would be aged and sorted into different pens based on sex, then provided quality hay and water while in the holding facility (refer to previous discussion about care of drought stressed animals). Mares or jennies and their un-weaned foals (if encountered) would be kept in pens together.

At the temporary holding facility, recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured animals would be provided by a veterinarian. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA).

Transport, Short Term Holding, and Adoption (or Sale) Preparation

Wild horses or burros removed from the range would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s) in straight deck semi-trailers or goose-neck stock trailers.

Vehicles would be inspected by the BLM Contracting Officer's Representative or Project Inspector prior to use to ensure animal safety. Animals would be segregated by age and sex and loaded into separate compartments. A small number of mares or jennies could be shipped with foals. Transportation of recently captured animals is limited to a maximum of 8 hours. During transport, potential impacts to individual animals can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses or burros are in extremely poor condition, it is rare for an animal to be seriously injured or to die during transport.

Upon arrival at the short term holding facility, recently captured wild horses and burros would be off-loaded by compartment and placed in holding pens where they are provided quality hay and water. If necessary, specific hay or supplement would be prescribed to help animals recover from drought stress. Most animals begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian would examine each load of horses or burros and provide recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured animals. Any animals affected by a chronic or

incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the AVMA. Wild horses or burros in very thin condition or animals with injuries would be sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. Some of these animals may be in such poor condition that it is unlikely they would have survived if left on the range. Some mares or jennies may lose their pregnancies. Every effort would be taken to help the mare make a quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

At short-term corral facilities, once the horses and burros have adjusted to their new environment, they are prepared for adoption or sale (horses only). Preparation involves freeze-marking the animals with a unique identification number, drawing a blood sample to test for equine infectious anemia (Coggins test), vaccination against common equine diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses and burros are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

At short-term corral facilities, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, 2008, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

Adoption or Sale with Limitations, and Long Term Pastures

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age, and 5 feet tall for burros. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse or burro for one year and the animals and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse or burro after an inspection from an official, veterinarian, or other individual approved by the authorized officer to ensure humane care, at which point the horse or burro becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR §4750.

Potential buyers (horses only) must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption three times. The application also specifies that all buyers are not to re-sell the animal to slaughter buyers or anyone who would sell the animal to a commercial processing plant. Sales of wild horses are conducted in accordance with BLM policy.

Potential impacts to wild horses from transport to adoption, sale LTPs (horses only) are similar to those previously described. One difference is that when shipping animals for adoption, sale or LTP, animals may be transported for a maximum of 24 hours. Immediately prior to

transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate feed bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel.

Wild horses generally five years of age and older (those for which there is less adoption or sale demand) are transported to LTPs. Establishment of each LTP is subject to a separate environmental analysis and decision making process. Wild horses in LTPs remain available for adoption or sale to individuals interested in acquiring a larger number of animals and who can provide the animals with a good home. The BLM has maintained LTPs in the Midwest for over 20 years.

The LTPs are designed to provide excess wild horses with humane, and in some cases life-long care in a natural setting off the public rangelands. There, wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. About 28,600 wild horses that are in excess of the current adoption or sale demand (due to age or other factors such as economic recession) are currently located on private land pastures in Oklahoma, Kansas, Iowa, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTPs are highly productive grasslands compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 10-11 acres per animal). Of the animals currently located in LTP, less than one percent is age 0-4 years, 49 percent are age 5-10 years, and about 51 percent are age 11+ years.

Mares and castrated stallions (geldings) are segregated into separate pastures except one facility where geldings and mares coexist. No reproduction occurs in the LTPs, but some foals are born to mares that were pregnant when they were removed from the range and placed onto the LTP. These foals are gathered and weaned when they reach about 8-10 months of age and are then shipped to short-term facilities where they are made available for adoption. Handling of wild horses at the LTPs is minimized to the extent possible although regular on-the-ground observation and weekly counts of the wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals could be humanely euthanized if they are in very thin condition and are not expected to improve to a Henneke Body Condition Score of 3 or greater due to age or other factors. Natural mortality of wild horses in LTP averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). The savings to the American taxpayer which results from contracting for LTP averages about \$4.45 per horse per day as compared with maintaining the animals in short-term holding facilities.

Euthanasia and Sale without Limitation

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is required under the WFRHBA, Congress prohibited the use of appropriated

funds for this purpose between 1987 and 2004 and again in 2011. It is unknown if a similar limitation will be placed on the use of Fiscal Year 2012 appropriated funds.

2. Environmental Consequences of the Grazing Closure Alternative

Similar to the Proposed Action, the Grazing Closure Alternative would have indirect impacts to wild horses or burros that would consist of reduced numbers of grazing animals on the range through the drought period and drought recovery. The impacts would be a degree of increased availability and quality of forage and water dependent upon the specific vegetation and water present throughout the HMA(s) and the inherent overlap of livestock and wild horses or burros of that particular HMA. In any case, the absence of all livestock within drought affected areas would ensure maximum recovery of vegetation and riparian areas especially in HMAs that are at or below the established AML or where wild horse and burro distribution is good as a result of adequate and dispersed available water. In areas where wild horse or burro populations exceed AML or are concentrated, the beneficial impacts to the range from grazing animals would be lessened, yet drought recovery would be enhanced.

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought.

Implementation of drought management actions such as temporary water hauls or wild horse or burro removals from drought affected HMAs would be delayed which could result in deterioration of animal health and body condition and degradation of rangeland health as water and/or vegetation resources dwindle under continued use by livestock and wild horses or burros.

Wild horse and burro habitat could be affected by concentrated use by livestock and wild horses or burros. Drought affected forage and riparian resources would be more likely to be degraded or irreparably damaged by overuse or improper timing of use. Trailing, trampling, and erosion of soils and bare ground would increase, as would degradation to riparian areas and utilization of rangeland plants. Excessive utilization of plants and pawing them from the ground would cause plant death, preventing recovery of plant health once drought ceases. Irreparable damage may occur.

Competition for the available water and forage between wild horses, and native wildlife would continue and further increase. Though wild horses and burros are a long-lived species with documented survival rates exceeding 92%, and little impact from predation and disease occurs. Experience has shown that once the vegetation and water resources are at critically low levels, deterioration of animal health can happen very quickly, with young foals and mares or jennies affected most severely. Without implementation of drought management actions, it is likely that many of these animals would die from starvation and/or dehydration. The resultant population could be heavily skewed towards the stronger stallions which could lead to social disruption in the HMAs.

Recovery from drought could be delayed, and could require many years before pre-drought production is achieved. In the short and long-term, wild horses and burros would have reduced quality and quantity of habitat, which could affect distribution of use within the HMAs, concentration of use and have impacts to animal health as resources are less plentiful.

By managing the public lands in this way, the vegetation and water resources would be severely impacted with little to no potential for recovery. This degree of rangeland degradation could lead to management of wild horses or burros at greatly reduced levels in the future. As a result, the No Action Alternative would adversely impact the health and wellbeing of wild horses or burros in drought afflicted HMAs and would inhibit the recovery of drought stressed habitat important to the future management of these herds. A TNEB would not be maintained or restored under the No Action Alternative.

As populations increase beyond the capacity of the habitat, bands of horses or burros could leave the boundaries of the HMAs in search of forage and water, thereby increasing impacts to rangeland resources outside the HMA boundaries as well(i.e., in areas not designated for their use).

An indirect impact of the No Action Alternative would include animal and/or human deaths due to the increased vehicle collisions as wild horses and/or burros cross roadways in specific areas searching for food and water.

The BLM realizes that some members of the public advocate “letting nature take its course”, however, allowing horses to die of dehydration and starvation would be inhumane treatment and clearly indicates that an overpopulation of horses exists in the HMA, and is not consistent with the WFRHBA. Additionally, promulgated Federal Regulations at Title 43 CFR 4700.0-6 (a) state “*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat*” (emphasis added).

O. Wilderness

Affected Environment

The BMD administers 15 Wilderness Study Areas (WSAs); three WSAs totaling 108,460 acres located within the MLFO (Simpson Park, Roberts Mountain and Antelope Range) and 12 WSAs totaling 613,415 acres located within the TFO (Fandango, Morey Peak, Blue Eagle, Rawhide Mountain, Palisade Mesa, The Wall, South Reveille, Kawich, Silver Peak Range, Pigeon Spring, Queer Mountain and Grapevine Mountains). Additionally, two Instant Study Areas (ISA) totaling 582 acres have been designated within the BMD, Pinyon Joshua in Esmeralda County and Mountain Meadow in Nye County. ISAs are identical to WSAs in terms of management and policy. Portions of 4 WSAs over-lapping the BMD boundary (Augusta Mountains, Desatoya Mountains, Park Range and Riordan’s Well) are administered by other BLM-Nevada Districts through Inter-District agreements. These agreements are subject to revision transferring management responsibility back to the BMD.

WSAs are designated by the BLM as having wilderness characteristics worthy of consideration by Congress for permanent Wilderness designation. While Congress considers whether to designate a WSA as permanent Wilderness, the BLM manages the area to prevent impairment of its suitability for Wilderness designation. All noxious weeds and invasive, non-native species treatments within WSAs must be compliant with BLM Handbook H-8550-1, *Interim Management Policy (IMP) and Guidelines for Lands under Wilderness Review*. This handbook provides specific policy and procedure for managing public lands under wilderness review. Any treatment proposed within a WSA would include a “minimum tool analysis”, which determines if the methods and equipment proposed for use have the minimum impact on the quality of a wilderness experience, as well as the physical, biological and cultural resources within the WSA.

1. Environmental Consequences of the Proposed Action

Under the Proposed Action, rangeland and riparian resources within the WSAs would improve due to the installation of temporary water sources (e.g., temporary water hauls, and water pipelines). Livestock, wild horses, and burros would be provided with an alternative water source to utilize outside of WSAs. This would minimize the negative impacts that could occur within WSAs. These impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination that could occur when livestock, wild horses, and burros utilize rangeland and riparian resources for forage and water.

Changes in livestock management practices (e.g., change in season of use, reduced grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), targeted grazing of invasive annual communities, and temporary change in kind or class of livestock) under the Proposed Action would have a beneficial impact on WSAs. These actions would allow the rangeland and riparian resources to temporarily recover from the negative impacts of livestock grazing in WSAs. These impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts could impair the wilderness characteristics within WSAs.

Wild horse and burro removal under the Proposed Action would have a beneficial impact on the rangeland and riparian resources within WSAs. Wild horses and burros utilize rangeland and riparian resources within WSAs for forage and water. If unmanaged under drought conditions, this usage can cause negative impacts. Negative impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts can impair the wilderness characteristics within WSAs.

2. Environmental Consequences of the Grazing Closure Alternative

The grazing closure alternative would positively impact WSAs within the BMD. Rangeland and riparian resources within WSAs would be allowed to temporarily recover from livestock grazing. This recovery would last for the duration of the drought and one additional growing season following the cessation of the drought. During this period, rangeland and riparian resources within WSAs would not be receiving the negative impacts of livestock grazing (e.g., Vegetation trampling, soil compaction, erosion, and water contamination).

3. Environmental Consequences of the No Action Alternative

The No Action Alternative would negatively impact the wilderness characteristics of the WSAs within the BMD. WSAs must meet certain criteria in order to be studied further for a determination of suitability as wilderness. Criteria include an area which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; has outstanding opportunities for solitude or a primitive and unconfined type of recreation; has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (Section 2(c) of the Wilderness Act of 1964). The No Action Alternative would not allow for changes in livestock grazing management to adjust to drought conditions. Over time, this could impair the same qualities that the WSAs originally met in order to receive further study regarding their suitability as wilderness. During drought conditions, livestock, wild horses, and burros would congregate in areas that receive a higher abundance of moisture, especially riparian areas. Riparian areas that are within WSAs could be degraded. This degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination.

IV. CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ) regulations implementing NEPA defines cumulative impacts as: "The impact on the environment which results from incremental impact of the action when added to other past, present or reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7). For the purposes of this EA, cumulative impacts are the sum of all past and present actions, the Proposed Action and reasonably foreseeable future actions (RFFAs) resulting from public land uses. The purpose of the cumulative analysis in this EA is to evaluate the significance of the Proposed Action's contributions to cumulative impacts.

As required under NEPA and the regulations implementing NEPA, cumulative impacts have been addressed for each resource brought forward for analysis. The extent of impacts to each resource will vary based on geographical and biological limits of that resource. Additionally, the length of time for cumulative effects analysis will vary according to the duration of impacts from the Proposed Action on the particular resource. The Cumulative Effects Study Area (CESA) for the Proposed Action is the entire BMD and administered allotments.

4.0 Past, Present and Reasonably Foreseeable Future Actions

The Past, Present and Reasonably Foreseeable Future Actions applicable to the assessment area are identified as the following:

Table 8: Past, Present and Reasonably Foreseeable Future Actions

Project Name or Description	Status (X)		
	Past	Present	Future
Issuance of multiple use decisions and permits through the allotment evaluation process	X	X	X
Wild horse gathers	X	X	X
Fence construction for resource protection and management	X	X	X
Mining exploration, extraction and reclamation	X	X	X
Geothermal exploration and development		X	X
OHV use and trail system			X
Woodcutting and pine nut and Christmas tree harvesting	X	X	X
Habitat and vegetation improvement treatments and projects	X		X
Wildfire suppression and rehabilitation	X	X	X
Invasive and noxious weed treatments	X	X	X

Any future proposed projects within the assessment area would be analyzed in an appropriate environmental document following site specific planning. Future project planning would also include public involvement.

4.1 Effect of Past, Present and Reasonably Foreseeable Future Actions

A. Air Quality

Cumulative Effects of the Proposed Action

Past, present and RFFAs cumulatively affecting air quality on the BMD have been identified as smoke, ash and debris from wildland fires/prescribed burns, fugitive dust from mining activities and (OHV) use of unimproved roads, combustion engine emissions, wind erosion of disturbed areas and herbicide applications.

Under the Proposed Action, DRAs would be implemented to maintain vegetation within the BMD to minimize the potential for accelerated erosion events. DRAs such as temporary water hauls could result in the short-term increase of wind born particulate matter and vehicle emissions during the hauling of water. Any airborne particulate matter caused by the implementation of DRAs coupled with past, present and RFFAs would be negligible and are not expected to cumulatively impact air quality.

The DRAs described in the Proposed Action are designed to protect vegetation and stabilize soils and would decrease wind born particulate matter in the long-term. Therefore, it is expected that the cumulative effects of the Proposed Action, would be beneficial and not significant in regards to air quality.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative are similar to those of the Proposed Action.

Cumulative Effects of the No Action Alternative

Marshall (1973) found that wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced. The Society for Range Management Task Group in Concepts and Terminology (1995) concluded that erosion was a function of protective attributes of vegetation (e.g., cover, biomass, density of plants). The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased soil erosion. Accelerated soil erosion rates would increase the amount of airborne particulate matter, which could reduce air quality causing public safety issues such as poor visibility or respiratory problems. This coupled with past, present and RFFAs such as smoke, ash and debris from wildland fires/prescribed burns and fugitive dust from mining activities and (OHV) use of unimproved roads would have adverse cumulative impacts on air quality.

B. Wildlife

Cumulative Effects of the Proposed Action

In the short-term, the Proposed Action could positively impact a wide variety of wildlife species mainly as a result of increased water and forage availability. In the long-term, wildlife would also benefit from improved rangeland health conditions.

The Proposed Action does not induce substantial growth or concentration of wildlife populations, displace or redistribute wildlife populations, cause a substantial reduction in wildlife population growth, reduce reproduction or survival, cause a substantial net increase in physiological expenditures, or create a substantial demand for forage or water. It is expected that the cumulative and incremental effects of the Proposed Action on wildlife would be beneficial.

Cumulative Effects of the Grazing Closure Alternative

In the short-term, the Grazing Closure Alternative could positively impact a wide variety of wildlife species mainly as a result of increased water and forage availability. In the long-term, wildlife would also benefit from improved rangeland health conditions.

The Grazing Closure Alternative does not induce substantial growth or concentration of wildlife populations; displace or redistribute wildlife populations; cause a substantial reduction in wildlife population growth; reduce reproduction or survival; cause a substantial net increase in physiological expenditures; or create a substantial demand for forage or water. It is expected that

the cumulative and incremental effects of the Grazing Closure Alternative on wildlife would be beneficial.

Cumulative Effects of the No Action Alternative

Under the No Action Alternative, current livestock and wild horses and burros management would continue during drought and would likely lead to the degradation of upland and riparian health. Over the short-term, negative impacts to wildlife include declines in physiological condition leading to depressed reproductive output and increased mortality. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health could lead to significant declines in wildlife populations, local extinctions and reduced connectivity between extant populations. Impacts would likely be considerable for species that depend on surface water and/or riparian areas for portions of their life history.

C. Cultural/Historical

Cumulative Effects of the Proposed Action

Past, present and RFFAs cumulatively affecting cultural resources on the BMD have been identified as wildland and prescribed fires, recreation/OHV use, general ground disturbing activities and the illegal desecration of evaluated and unevaluated sites. When compared with the previously identified cumulative impacts, the Proposed Action is not expected to contribute to cumulative loss of cultural resources. This is because the DRAs identified in the proposed action are aimed at maintaining vegetation health and limiting soil erosion. Furthermore, any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls, electric fences and above ground pipelines) would be surveyed for cultural resources prior to implementation. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to cultural and historical resources.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

Cumulative Effects of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and result in a continuation of current management practices, which are often poorly suited to drought. Drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use. This may lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of important cultural resources. Therefore, the No Action Alternative coupled with past, present and RFFAs known to affect cultural resources would have adverse cumulative impacts on cultural and historical resources.

D. Native American Religious Concerns

Cumulative Effects of the Proposed Action

Past, present and RFFAs cumulatively affecting cultural resources on the BMD have been identified as wildland and prescribed fires, recreation/OHV use, general ground disturbing activities and the illegal desecration of evaluated and unevaluated sites. When compared with the previously identified cumulative impacts, the Proposed Action is not expected to contribute to cumulative loss of cultural resources. This because the DRAs identified in the proposed action are aimed at maintaining vegetation health and limiting soil erosion. Furthermore, any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls, electric fences and above ground pipelines) would be surveyed for cultural resources prior to implementation. The placements of such temporary projects are flexible and would avoid any known cultural resources. Any temporary electric fences constructed would be designed in a manner that allows access at all current access points (e.g., trails, roads, etc.). The cumulative loss of cultural resources would be minimized since the BLM would take into account any potential effects prior to the installation of temporary range improvements.

It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to Native American Religious Concerns.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

Cumulative Effects of the No Action Alternative

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and result in a continuation of current management practices, which are often poorly suited to drought. Drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse and burro use. This may lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of important cultural resources. Edible and medicinal plants may be reduced or eliminated from traditional cultural sites if overgrazing occurs during drought. Riparian areas may experience heavy use by livestock and/or wild horses and burros as upland vegetation dries out and becomes less palatable and water resources become scarce. The delayed implementation of DRAs under the No Action Alternative coupled with past, present and RFFAs known to affect cultural resources would have adverse cumulative impacts on Native American religious concerns.

E. Noxious Weeds/Invasive Non-native Species

Cumulative Effects of the Proposed Action

Noxious weeds and/or invasive non-native species are spread by wind, water, animals and people. The potential for these species to invade an area and become established increases with ground disturbance and reduced vigor of native plants. In the short-term, the Proposed Action would provide for targeted grazing of non-native species. In the long-term the Proposed Action would limit adverse impacts to native vegetation and reduce the potential for soil erosion, thus limiting the opportunity for noxious weeds and/or invasive non-native species to become established. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in regards to noxious weeds and invasive non-native species.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action. However, the Grazing Closure Alternative does not provide an opportunity for targeted grazing of non-native species.

Cumulative Effects of the No Action Alternative

Under the No Action Alternative, current livestock and wild horse and burro management would continue during drought and would likely lead to the degradation of upland and riparian health. Reduced plant vigor, soil cover and increased erosion are linked to reduced upland and riparian health. This would increase the potential for invasion by noxious weeds and non-native species and lead to a long-term increase in noxious weeds and non-native species.

F. Riparian/Wetlands

Cumulative Effects of the Proposed Action

The direct impact of the Proposed Action would be to reduce the impact of grazing on riparian vegetation. The reduction in the loss of riparian vegetation as a result of the proposed action would increase bank stability, reduce erosion, sedimentation, and changes in channel morphology, and increase groundwater recharge.

Other factors that could adversely impact riparian vegetation such as diversion of stream flow and groundwater pumping for agriculture and mining are not altered by the proposed action. The reduction in in-stream flows as a result of diversion for irrigation and/or mining during periods of drought may still lead to a reduction in riparian vegetation. Groundwater pumping for irrigation and mining with a reduction in groundwater recharge for periods of sustained drought may result in a lowering of the water table in some areas adversely impacting riparian vegetation.

The increase in mining, geothermal and solar development in the BMD might continue into the foreseeable future resulting in the potential loss of some riparian habitat.

Cumulative Effects of the Grazing Closure Alternative

The direct impact of the proposed Action would close drought affected areas to grazing during the period of the drought and provide for one additional growing season for riparian vegetation to recover. Researchers in Oregon conducted a study of a stream segment that had been removed from grazing impacts for four years (Dobkin *et al.*, 1998). They observed that during the four year period the water table rose, expanding the hyporheic zone laterally from the channel. They also observed an increase in quantity and duration of base flows.

Most climate models predict the severity and frequency of droughts in the southwestern United States is expected to increase, increasing the need for a drought management program. The Grazing Closure Alternative would allow the restoration of riparian vegetation in a climate with longer, hotter growing seasons, and increased intensity of droughts.

Cumulative Effects of the No Action Alternative

Under the No Action Alternative there could be a significant loss of riparian vegetation. The loss of riparian vegetation would result in increased erosion and sedimentation.

The reduction in riparian vegetation as a result of grazing would increase the impacts of storm run-off from development. Channels could become entrenched, and flood plains become hydrologically disconnected from channel stream flow resulting in the loss of riparian vegetation and the formation of dry terraces.

Based on climate models, the severity and frequency of droughts in the southwestern United States is expected to increase. Predicted climate change may result in the acceleration of the degradation of the riparian ecosystem.

G. Water Quality

Cumulative Effects of the Proposed Action

The direct impact of the Proposed Action would be to reduce the impact of grazing on riparian vegetation. This would reduce the rate of loss of riparian vegetation and minimize increases in water temperature, erosion and sedimentation.

Agriculture and mining are not altered by the proposed action. During drought periods, agriculture could supplement a reduction in surface water with groundwater. The use of additional amounts of groundwater high in total dissolved solids would increase the deposition of salts in the upper soil zone.

Cumulative Effects of the Grazing Closure Alternative

The Grazing Closure Alternative would allow for the restoration of riparian vegetation reducing erosion, sedimentation and water temperature. Reestablishment of riparian vegetation will help mitigate the adverse impacts of agriculture and mining related run-off. Riparian vegetation acts as a filter and reduces sediment and contaminant loading to streams.

Cumulative Effects of the No Action Alternative

The No Action Alternative would result in a significant decrease in water quality. Sedimentation and water temperatures would increase. The reduction or removal of riparian vegetation would exacerbate the impacts to water quality from agriculture and mining run-off.

H. Grazing Management

Cumulative Effects of the Proposed Action

Past, present, and RFFAs have the potential to impact livestock grazing activities, at least temporarily. It is expected that the Proposed Action could contribute to the cumulative impacts of past actions that have resulted in improved rangeland health conditions such as; rangeland health evaluations, wildland fires, habitat treatment activities, and past weed treatments. Temporary displacement of livestock as a result of actions that could occur under the Proposed Action along with past, present and RFFAs also contributes to the direct cumulative impacts to grazing management. The Proposed Action would require an increase in grazing management practices on allotments occurring within drought-afflicted areas of the BMD. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs from permittees. The cumulative effects of these inputs have been analyzed within the Socio-Economic Values section of this document.

The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurrow and Taylor 1999). The proposed action would provide for the maintenance of vegetation and continuation of opportunities for grazing when past, present and RFFAs could provide additional disturbances (e.g., mineral exploration/extraction, disturbance from wildland and prescribed fire, road maintenance, etc.) across the public lands. These actions result in an increase in disturbed lands, increasing the risk of degradation of vegetative resources. Cumulatively, the indirect impact of the Proposed Action when coupled with these particular past, present and RFFAs would improve resources available for livestock grazing management due to a reduction in the net-loss of vegetative resources.

Cumulative Effects of the Grazing Closure Alternative

In the short-term, the Grazing Closure Alternative would remove livestock from public lands and eliminate grazing management. The cumulative effects of the reduced opportunity for grazing have been analyzed within the Socio-Economic Values section of this document.

In the long-term, the Grazing Closure Alternative would have similar impacts as the Proposed Action. The removal of grazing would maintain vegetative cover and reduce the potential for soil erosion and noxious weed invasion. This would provide for the sustainable management of the rangelands and provide future opportunities for grazing.

Cumulative Effects of the No Action Alternative

The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased susceptibility to soil erosion. The No Action Alternative would directly impact rangeland health, indirectly impacting grazing management practices and levels of livestock production over the long term.

H. Land Use Authorization

Cumulative Effects of the Proposed Action

The Proposed Action would provide for the maintenance of rangeland health and reduce soil erosion and the potential for noxious weed invasion. This would beneficially impact land use authorizations by reducing the maintenance cost of right-of-ways as well as protect access to sites or the sites themselves. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in regards to Land Use Authorization.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

Cumulative Effects of the No Action Alternative

The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased susceptibility to soil erosion. Noxious weeds and non-native invasive species are more likely to invade areas that are in poor condition. Noxious weeds increase the costs for maintenance and soil erosion could damage access to sites or the sites themselves. Increased erosion and density of noxious weeds associated with the prolonged degradation of rangeland health that would occur with the No Action Alternative would have a negative effect on Land Use Authorizations.

I. Recreation

Cumulative Effects of the Proposed Action

In the past, recreation within the BMD has been dispersed and primitive in nature, and presently remains that way. Under the Proposed Action, reasonably foreseeable future actions include a positive impact on wild horse viewing, and riparian areas that are utilized for recreational purposes. In recent years, there has been an increased interest in wild horses and wild horse viewing within the BMD. Under the proposed action, gathers would be implemented in order to minimize the negative impacts that drought conditions would have on wild horses that are on the range. Wild horse viewers would observe horses that are in better viewing condition than if no

action is taken, due to fewer horses utilizing scarce resources under drought conditions. Due to these actions, wild horse viewers would continue to come to the BMD for their wild horse viewing needs. This would have a positive impact on communities within the BMD that rely partly on wild horse viewers as a source of income.

While limited, the BMD does contain riparian resources that are frequently used for recreational purposes. Impacts under the Proposed Action include minimizing the degradation of riparian resources used for recreational purposes. If livestock management actions and wild horse and burro gathers are implemented, riparian resources wouldn't be impacted as heavily as if no action was taken. If drought conditions persisted, this would cause livestock, wild horses, and burros to seek out any remaining water sources in order to survive. This could result in large congregations of animals in riparian areas that are utilized for recreation, causing degradation to the riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These negative impacts would be minimized under the proposed action. Visitors would continue to utilize riparian resources within the BMD for recreational purposes. This would have a positive economic impact on communities within the BMD that rely partly on recreational visitors as a source of income.

Cumulative Effects of the Grazing Closure Alternative

Past and current actions within the BMD include allowing for livestock grazing in areas which coincide with recreation activities. Reasonably foreseeable future actions under the Grazing Closure Alternative include a temporary benefit to rangeland and riparian resources that are utilized for recreation purposes. Livestock would not cause negative impacts that could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts would continue for the duration of the drought plus one growing season following the cessation of the drought. These measures would protect rangeland and riparian resources within the BMD, and allow them to remain suitable areas for recreation. This would have a positive economic impact on communities within the BMD that rely partly on recreational visitors as a source of income.

Cumulative Effects of the No Action Alternative

In the past, recreation within the BMD has been dispersed and primitive in nature, and presently remains that way. Impacts under the No Action Alternative include reduced wild horse viewing, and a degradation of riparian areas used by recreationists. In recent years, there has been an increased interest in wild horses and wild horse viewing within the BMD. If no action is taken and rangeland and riparian resources deteriorate under drought conditions, this would affect the health of wild horses that are on the range. Wild horse viewers could see horses in malnourished conditions, and could view horses that are near death or have died due to these conditions. This would have a negative impact on wild horse viewing within the BMD. This impact could cause wild horse viewers to search for other wild horse viewing opportunities outside of the BMD. This would result in a negative economic impact on communities within the BMD that rely partly on wild horse viewers as a source of income.

While limited, the BMD does contain riparian resources that are frequently used for recreational purposes. Reasonably foreseeable future actions under the No Action Alternative would include a degradation of the riparian resources within the BMD. Under the No Action Alternative, changes in livestock management wouldn't be implemented and wild horse and burro gathers wouldn't take place. If drought conditions persisted, this would cause livestock, wild horses, and burros to seek out any remaining water sources in order to survive. This could result in large congregations of animals in riparian areas that are utilized for recreation, causing degradation to the riparian resource. Degradation could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts could cause recreation users to search for other recreation areas outside of the BMD. This would result in a negative economic impact on communities within the BMD that rely partly on recreational visitors as a source of income.

J. Socio-Economic Values

Cumulative Effects of the Proposed Action

In the short-term, the Proposed Action could adversely impact ranchers who hold BLM grazing permits due to costs incurred to implement DRAs. However, in the long-term, ranchers would benefit from improved rangeland health conditions. Wildlife, wild horses and burros would also benefit from the increased production rates of forage and habitat improvement.

The Proposed Action does not induce substantial growth or concentration of population; displace a large number of people; cause a substantial reduction in employment; reduce wage and salary earnings; cause a substantial net increase in county expenditures; or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the Proposed Action, would be beneficial and not significant.

Cumulative Effects of the Grazing Closure Alternative

In the short-term, the Grazing Closure Alternative could adversely impact ranchers who hold BLM grazing permits due to costs incurred to provide alternate livestock forage. However, in the long-term, ranchers could benefit from improved rangeland health conditions. Wildlife, wild horses and burros would also benefit from the increased production rates of forage and habitat improvement.

This alternative does not induce substantial growth or concentration of population; displace a large number of people; cause a substantial reduction in employment; reduce wage and salary earnings; cause a substantial net increase in county expenditures; or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the Grazing Closure Alternative, would be beneficial and not significant.

Cumulative Effects of the No Action Alternative

Under the No Action Alternative, current livestock and wild horses and burros management would continue during drought and would likely lead to the degradation of upland and riparian health. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health may result in grazing allotments failing to meet rangeland S&Gs in the future.

Consequently, BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which may adversely impact affected permittees. Additionally, declining conditions of the rangelands may be coupled with declining conditions of livestock, wild horses and burros and wildlife. During periods of prolonged drought, profits of ranchers would decline. This may or may not lead to existing ranches becoming economically unviable. The BLM assumes that if existing ranches fail, some other corporation or individual may step in to purchase the base property and grazing privileges. It is not possible to foresee which base properties, if any, may change out of livestock production and into some other form of business. If base properties do remain active for livestock production, the industry as a whole would continue to exist but under different ownership and likely with reduced income.

L. Soils

Cumulative Effects of the Proposed Action

Past, present and RFFAs such as historic grazing management, range improvement construction, mining exploration/extraction, wild horse use and burro use, OHV use, and wildland and prescribed fires have impacted soils, at least temporarily, in the form of soil compaction, loss of soil-site stability and changes in physical and/or biological processes. These impacts, which may be in the form of compaction, erosion, loss of soil structure, or a combination of the three, are dependent upon the size and nature of the actions that have or may occur across the landscape. Other activities that have resulted in improved rangeland health have been implemented to improve soil site stability such as changes in grazing management, removal of excess wild horses, reclamation, rehabilitation activities and authorization of various range improvement projects.

There is broad agreement that improper grazing can negatively impact various rangeland ecosystem functions and degrade ecosystem services (Belsky et al. 1999; Briske et al. 2008; Tate et al. 2004). This is especially true during drought, when plant production and vigor is reduced and plants become increasingly vulnerable to grazing. The quality of the soil determines the nature of plant ecosystems and the capacity of land to support animal life, vegetation and society (Brady and Weil 2002). Soil erosion decreases the capacity of the soil to provide these services. The erosion hazard during drought is increased when prolonged grazing pressure further reduces plant cover (Thurow and Taylor 1999).

The livestock and wild horse and burro management strategies described in the Proposed Action would provide for the maintenance of soil cover. The Proposed Action would also limit the impact to riparian areas where improper management can lead to increased erosion in a short amount of time. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to soils.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

Cumulative Effects of the No Action Alternative

Increases in wind and water erosion are positively correlated to reduced plant cover. Marshal (1973) found that wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced. The Society for Range Management Task Group in Concepts and Terminology (1995) concluded that erosion was a function of protective attributes of vegetation (e.g., cover, biomass, density of plants). The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased susceptibility to soil erosion. Therefore, it is expected that the No Action Alternative would have a negative effect on soils within the BMD.

M. Vegetation (Including SSS)

Cumulative Effects of the Proposed Action

Past, present and RFFAs brought forward in Table 8 have resulted in potential direct and indirect impacts to vegetative resources. Most actions that occur have resulted in the improvement of vegetative communities as a whole. Activities such as rehabilitation/restoration projects, noxious/invasive weed treatments, changes in grazing management, and removal of wild horses have direct impacts to vegetative communities by improving vegetative health (vigor, density, and production). Activities such as the implementation of range improvement projects are designed to improve vegetative conditions by modifying livestock distribution patterns within an area. Improved livestock distribution patterns limit grazing pressures on vegetative resources within a given area therefore allowing for an increased vigor, density, and productive response. Where impacts have resulted in a loss of vegetation (e.g., mining, wildland and prescribed fires, geothermal exploration, OHV use) mitigation efforts are typically incorporated in order to limit a net loss across the landscape.

During drought, it is imperative that proper grazing management occurs. The Proposed Action is designed to reduce the impacts of livestock and wild horse and burro use on vegetation during drought.

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka

and White 1986). The DRAs described in the Proposed Action are aimed at ensuring adequate residual plant material is left to protect the soil and provide for sustainable plant production. Maintenance of native plants is important for the continuation of healthy and diverse plant communities, therefore, it is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to vegetation.

Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative are similar to those of the Proposed Action. However, the Grazing Closure Alternative does not provide an opportunity for targeted grazing of non-native species, which could be used to enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion.

Cumulative Effects of the No Action Alternative

The degree to which drought impairs the range's potential for future plant production depends on the intensity, frequency, and timing of grazing (Howery 1999). Thurow and Taylor (1999) found that unsustainable range use leads to erosion, crusting and degraded vegetation. This causes an increase in the frequency and consequences of drought. Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). As plants are overgrazed their root system is reduced which in turn limits their ability to capture and use soil moisture.

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought. Therefore, it is expected that the No Action Alternative would have negative cumulative impacts on vegetation. Overuse of vegetation during drought would directly impact the health of vegetation and reduce the ability of vegetative communities to use soil nutrients and water even during times of average precipitation.

N. Wild Horses and Burros

Cumulative Effects of the Proposed Action

Cumulative beneficial effects from the Proposed Action are expected, and would include improvement of the rangeland vegetation and riparian areas, which in turn positively impact wildlife, wild horse populations, and livestock as forage and water availability and quality is protected from the effects of drought.

The combination of the past, present, and reasonably foreseeable future actions, along with the Proposed Action, should provide the best opportunity to maintain stable wild horse and burro populations, healthier rangelands and animals, and avoid future emergency situations.

The Proposed Action would contribute to isolated areas of disturbed vegetation through the gather activities. Due to the small size or short duration of the disturbance, cumulative impacts

associated with the Proposed Action, when compared to the overall CESA, are expected to be negligible especially when identified mitigation measures are implemented.

The Proposed Action is expected to result in indirect impacts that would contribute to improved rangeland health. In the long term, the DRAs in addition to foreseeable actions (such as changes to livestock management systems) would lead to improved habitat for wild horse, burros and wildlife. The actions identified for Livestock and Wild Horses and Burros, whether implemented alone or in combination would promote recovery of native vegetation affected by drought as well as reduce or eliminate additional degradation to vegetation and riparian areas.

Because of the movement of wild horses between neighboring HMAs, any removal operation, as well as future gathers could affect the number of animals in these HMAs. Experience has shown that when populations are reduced in one HMA, often times there are compensatory population fluctuations as wild horses or burros migrate into an area of lower population from an area of higher population. This is likely a natural response to reduced competition for forage, water, and space. The outcome can be noticeable or involve subtle shifts in the populations between HMAs over time, and particularly in the years following a gather operation.

Due to the normal movement of wild horses and burros between HMAs and United States Forest Service WHTs, it is expected that genetic health of all populations will continue to be maintained. In the case of a complete removal the genetic health of the HMA could be impaired. If possible, an adequate number of animals would be held in a contract facility until it deemed possible to safely release the wild horses or burros and ensure their welfare.

In future years, the implementation of fertility control could reduce the overall number of wild horses needing to be removed from the range. The result could be maintaining stable populations within the established AML ranges, removal of primarily young animals, and avoiding the cycle of over populated ranges, necessitating the gather and removal of large numbers of excess animals in order to achieve the lower limit of AML. Cumulatively, application of fertility control through the Proposed Action could increase the health of mares within the HMA with reduced biological costs due to repeated births and nursing foals. Once normal fertility resumes, mares would reflect higher body condition which would result in larger, stronger foals more apt to reach their genetic potential and survive adverse conditions.

With implementation of the Proposed Action, excessive use by wild horses or burros would be minimized or avoided. Key forage species would improve in health, abundance and robustness, and would be more likely to set seed and reproduce, which in turn would contribute to their increase within the plant community. As future wild horse or burro decisions are implemented and future gathers conducted to remove excess animals and maintain AML, these impacts are expected to continue and result in overall improvements to the forage availability for livestock, wild horses and wildlife. Habitat would be protected from further losses of important key forage species, which would increase in frequency, vigor and production. Improved habitat condition would lead to improved equine body condition, healthier foals, and ensure herd sustainability through drought years.

Cumulative Effects of the Grazing Closure Alternative

Cumulative impacts of this alternative in combination with all other past, present and future actions would consist of enhanced rangeland health in the long term as recovery from drought ensues in the absence of livestock grazing. Effects to wild horses would be a degree of improved quality and quantity of forage and water in the short term and potentially in the long term if recovery from drought and subsequent impacts rangeland health are notable. Future impacts from overpopulation of wild horses or burros, changes to livestock management or actions that cause changes to animal distribution on the range (including future or continued drought) could negate impacts from this alternative in the long term. There are however, no adverse impacts to wild horses or burros anticipated from this alternative.

Cumulative Effects of the No Action Alternative

The No Action Alternative would not result in any long-term cumulative benefits to any rangeland user. The No Action Alternative would allow continued degradation of vegetation by wild horses or burros within drought affected rangeland, which would cause continued loss of key perennial forage species replaced by less palatable and nutritious native and non-native plants.

In HMAs that support inadequate resources in relation to the population of animals, emergency conditions for wild horses and burros could result. No other past, present or reasonably foreseeable actions would offset the potentially irreparable damage to the range. Lack of appropriate management action at this time could result in future decisions to reduce AML or eliminate portions of HMAs from long term management due to lack of resources.

Without an emergency gather to remove the stressed animals, a large portion of the population could die a painfully suffering death. Animal health, particularly wild horses would be affected for many years as the range begins to recover from drought under the pressure of a population of animals that is out of balance with the resources.

Deterioration of uplands and riparian areas would not ensure healthy habitat for future generations of wild horses, burro or wildlife. Chronic and long term degradation of rangeland resources could result in irreparable damage to the arid habitat and could result in the need to permanently remove all wild horses from the range in certain HMAs, cumulatively resulting in reduced AML or discontinuing long term management of wild horses or burros due to lack of suitable habitat. In the long term, the No Action Alternative would result in reductions or elimination of livestock grazing due to degraded range conditions, and a severe reduction or extirpation of native wildlife in most seriously affected areas.

O. Wilderness

Cumulative Effects of the Proposed Action

Past and present actions have allowed for livestock grazing within WSAs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. Reasonably foreseeable future actions under the Proposed Action include maintaining this standard for livestock grazing within WSAs, and preventing the degradation of rangeland and riparian resources within WSAs.

Past and present actions have allowed for wild horses and burros to utilize WSAs as long as that use doesn't degrade wilderness values, and vegetative cover. Reasonably foreseeable future actions under the Proposed Action include maintaining this standard regarding wild horses and burros within WSAs, and preventing degradation of wilderness values and vegetative cover. During drought conditions, gathers could be implemented. This would prevent the degradation of wilderness values within WSAs, and ensure the well-being of wild horses and burros on the range. The removal of wild horses and burros that utilize WSAs would allow for the temporary recovery of rangeland and riparian resources within WSAs.

Cumulative Effects of the Grazing Closure Alternative

Past and present actions have allowed for livestock grazing within WSAs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. Under the Grazing Closure Alternative, grazing wouldn't take place within WSAs for the duration of the drought and one additional growing season following the cessation of the drought. Reasonably foreseeable future actions include a temporary recovery of the rangeland and riparian resources within WSAs. This recovery would last for the duration of the drought, and one additional growing season following the cessation of the drought.

Cumulative Effects of the No Action Alternative

Past and present actions have allowed for livestock grazing within WSAs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. Reasonably foreseeable future actions under the No Action Alternative include the unnecessary and undue degradation of lands within WSAs. Under drought conditions, livestock would seek out remaining rangeland and riparian resources, including those within WSAs, in order to survive. This utilization could degrade the rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination. This degradation could negatively affect the wilderness values contained within WSAs.

Past and present actions have allowed for wild horses and burros to utilize WSAs as long as that use doesn't degrade wilderness values, and vegetative cover. Reasonably foreseeable future actions under the No Action Alternative include a degradation of wilderness values, and vegetative cover within WSAs. Under drought conditions, wild horses and burros would seek out remaining rangeland and riparian resources, including those within WSAs, in order to

survive. This utilization could degrade the rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination. This degradation could negatively affect the wilderness values contained within WSAs.

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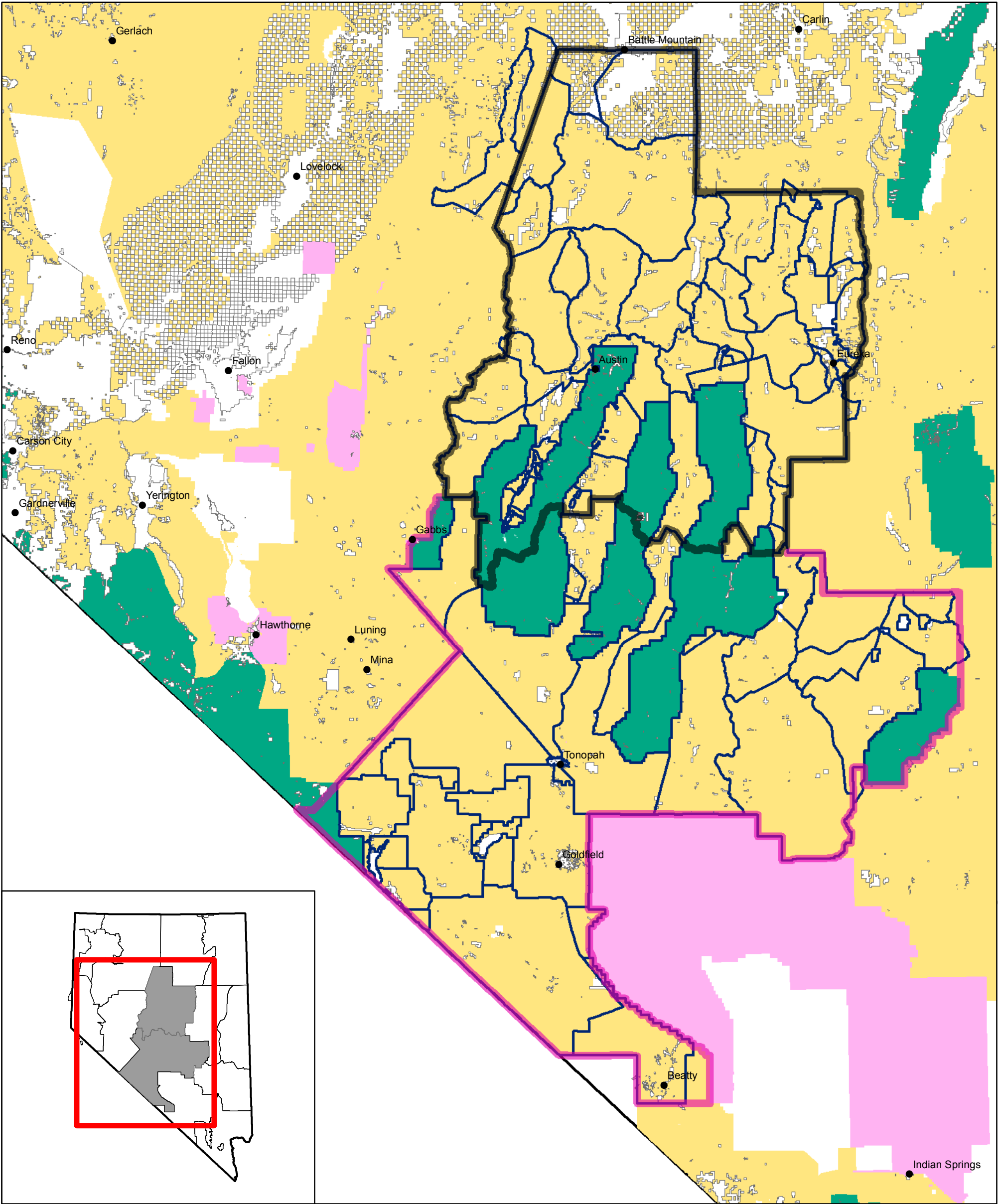
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Maps – Battle Mountain District

Battle Mountain District Allotments

Map 1



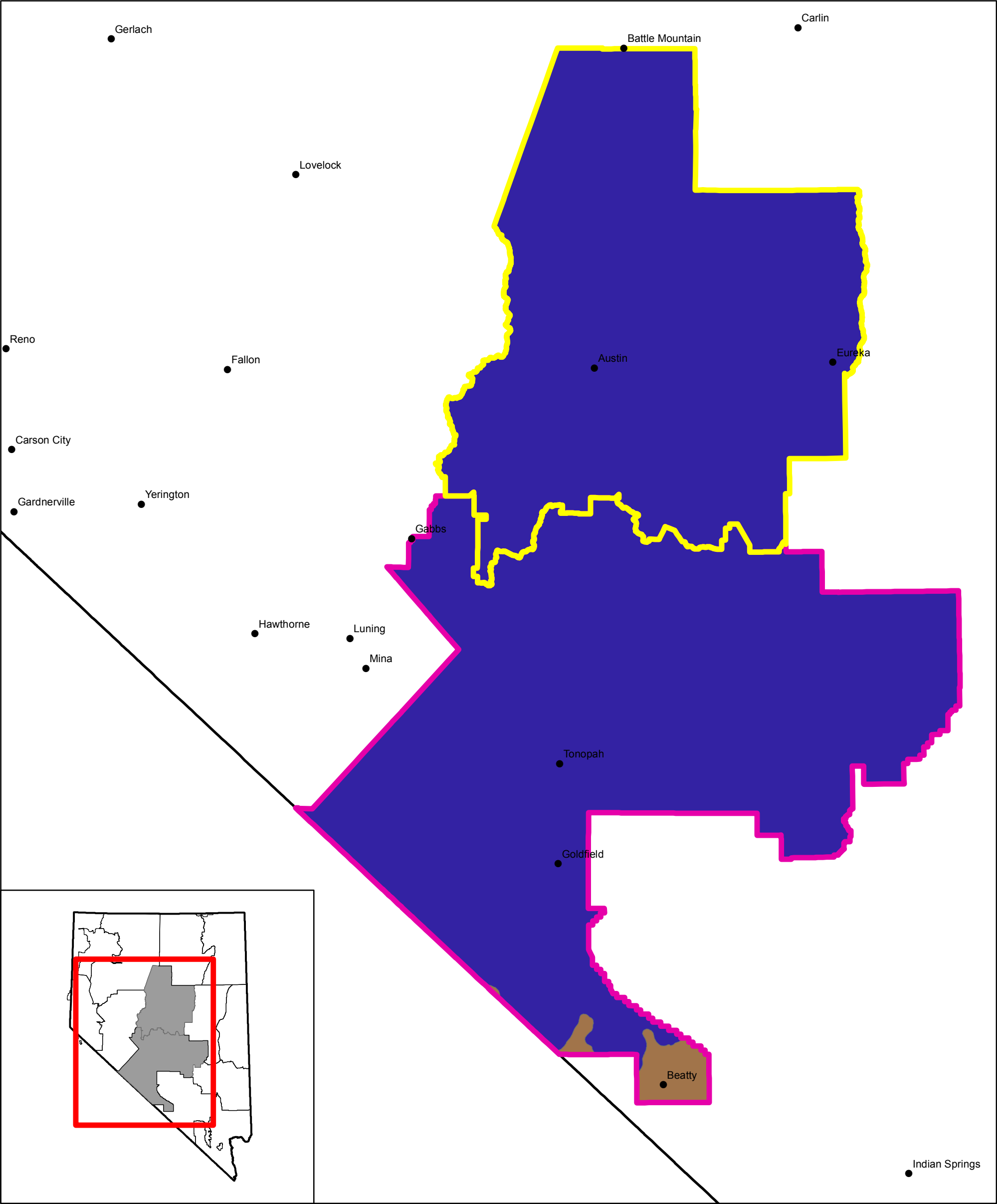
Legend

- Field Office**
- Mount Lewis Field Office
 - Tonopah Field Office
 - Grazing Allotment Polygons
- Land Status**
- BLM
 - PVT
 - FS
 - DOD
 - State Boundary

Battle Mountain District Office
January 17, 2012

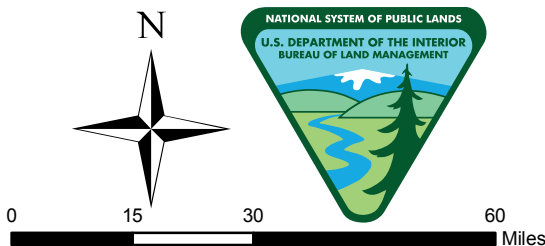
Battle Mountain District Ecoregions

Map 2



Legend

- Field Office**
- Mount Lewis Field Office
 - Tonopah Field Office
- Ecoregion**
- Central Basin and Range
 - Mojave Basin and Range
 - State Boundary

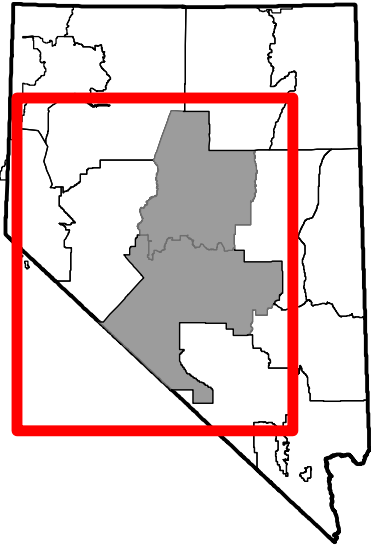
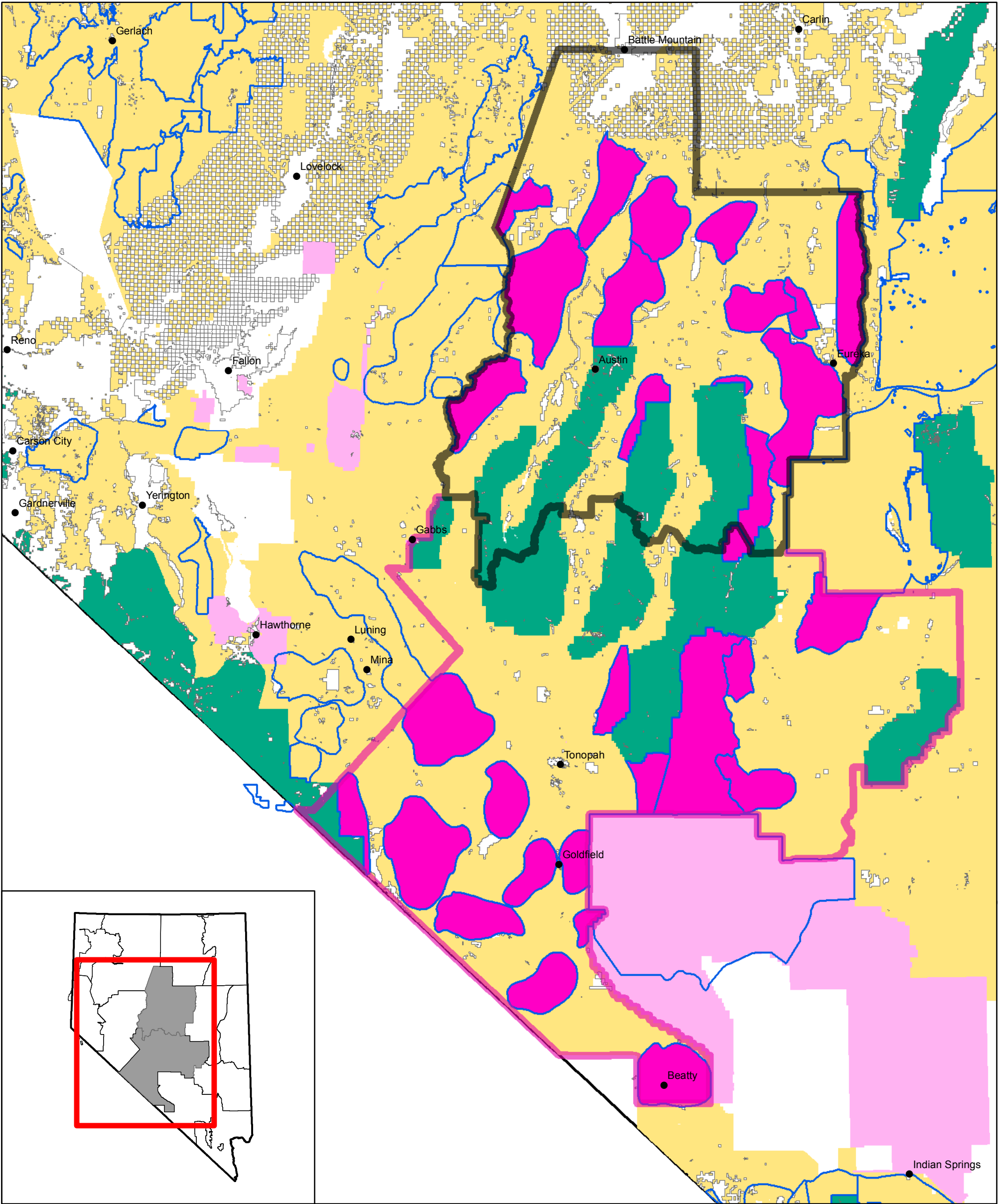


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Battle Mountain District Office
January 17, 2012

Battle Mountain District Herd Management Areas

Map 3



Legend

- Field Office**
- Mount Lewis Field Office
 - Tonopah Field Office
 - Herd Management Areas (HMA)
 - Battle Mountain District HMAs
- Land Status**
- BLM
 - PVT
 - FS
 - DOD
 - State Boundary

Battle Mountain District Office
January 17, 2012

Attachment 1 – Battle Mountain District Drought Detection and Monitoring Plan

Battle Mountain District

Drought Detection and Monitoring Plan

3/7/2012

This monitoring plan contains a description of drought indicators and response triggers that would be used facilitate the early detection and monitoring of drought conditions. This document also provides a description of the monitoring methods that would be used to determine if the drought response triggers have been met.

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Battle Mountain District Drought Detection and Monitoring Plan

I. Introduction

Drought, a normal part of the climate for virtually all regions of the United States, is of particular concern in the West, where an interruption of the region's already limited water supplies for extended periods of time can produce devastating impacts (Wilhite 1997). The Battle Mountain District (BMD) is located within the Central Basin and Range and Mojave Basin and Range ecoregions defined by the Western Ecology Division of the United States Environmental Protection Agency. Drought is considered to be a recurring event within both ecoregions. The early detection and prompt response to drought is needed to prevent further degradation to affected resources within the BMD. The purpose of this monitoring plan is to describe the drought indicators and response triggers that will be used facilitate the early detection and monitoring of drought conditions, and determine if the activation of drought response actions (refer to the Battle Mountain District Drought Management EA) is needed. This document also provides a description of the monitoring methods that will be used to determine if the drought response triggers have been met.

II. Goals

The early detection of drought is necessary for effective management during drought. The following list outlines the goals of the Battle Mountain District Drought Detection and Monitoring Plan:

Goal 1: Provide for the early detection of drought conditions.

Goal 2: Promptly identify and prevent further degradation to affected resources on lands affected by drought within the BMD.

Goal 3: Clearly define Drought Response Triggers that will be used to distinguish site specific drought level and activate drought response actions (refer to the Drought Management Plan).

Goal 4: Monitor the condition of forage and water resources.

Goal 5: Monitor weather conditions and identify when drought conditions have ceased.

III. Drought Indicators

Drought indicators are any single observation or a combination of observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the BMD would use to determine the onset and/or continuation of a drought.

A two-part drought definition was provided within the purpose and need for the Proposed Action section of this document (page 1). The first part of the definition describes drought as, "a

prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall.” Tracking weather conditions provides an early indication of drought. The U.S. Drought Monitor (<http://droughtmonitor.unl.edu/>) would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and Herd Management Areas (HMAs) within drought-afflicted areas would be used to evaluate the current condition of water resources and determine if water shortages exist.

Part two of the drought definition describes drought as, “A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water”. The U.S. Drought Monitor and the Vegetation Drought Response Index (VegDRI) (<http://vegdiri.unl.edu/>) would be consulted to determine drought afflicted areas and vegetation condition as it pertains to drought stress. Site visits to allotments and HMAs within drought-afflicted areas would be used to evaluate the current condition and production of key forage species as described in the associated Ecological Site Descriptions (ESDs) for the area. Evaluations would be used to determine if plants are exhibiting signs of drought stress and if forage shortages exist. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence (i.e., premature aging) and plant death.

The U.S. Drought Monitor can be accessed at <http://droughtmonitor.unl.edu/>. The Vegetation Drought Response Index can be accessed at <http://vegdiri.unl.edu/Home.aspx>.

IV. Drought Monitoring

4.0. Drought Response Triggers

Drought monitoring will be completed for both upland and riparian areas within the BMD. Monitoring will be conducted within areas of allotments and Horse Management Areas (HMAs) that are determined to be afflicted by drought. When it is determined that drought conditions exist, site visits to allotments and or HMAs within drought-afflicted areas will occur. Drought triggers will be used to determine site specific drought affects and activate drought response actions. Drought Response Triggers (Triggers) are thresholds associated with forage and water resources that indicate the need for site-specific drought response. Triggers would be used separately or in combination to activate Drought Response Actions. These triggers have been placed into two categories, water and forage. The following is a list of the triggers for both categories:

A. Water

This Trigger is based on the presence or absence of available water. Field visits would be conducted in drought-afflicted areas to determine if there are adequate water sources (natural and/or developed) to provide for the management and/or distribution of wildlife, wild horses and burros and livestock while maintaining riparian area functionality or the health of upland areas surrounding developed water sources (e.g., wells, pipelines, guzzlers, etc.).

Water would be classified as “available” or “unavailable” within areas affected by drought. “Available” is defined as an amount of water sufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values associated with the riparian areas and/or areas surrounding the water source. Resource values associated with riparian areas include riparian vegetation, bank stability, wildlife habitat and water quality. Resource values associated with upland areas surrounding water sources (e.g., wells, pipelines, etc.) include vegetation, nutrient cycling, soil site stability, hydrologic function and wildlife habitat.

“Unavailable” is defined as an absence of water or an amount of water that is insufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values.

Field observations and professional judgment would be used to determine availability. Criteria such as reduced quantity, noticeable accumulation of animal waste, and unsafe conditions due to mud or severely eroded banks would be used.

B. Forage

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). A lack of available soil moisture usually reduces the length of the growing season. A shorter growing season directly impacts above and below ground production and ultimately forage quantity and rangeland health. The degree to which drought impairs the range’s potential for future forage production depends on the intensity, frequency, and timing of grazing (Howery 1999).

The following drought response triggers associated with forage are aimed at ensuring proper utilization levels of upland and riparian key species, as described in the ESD associated with the site. Appropriate utilization levels provide adequate residual matter for the maintenance of plant and rangeland health especially during a drought. The triggers have been organized into three categories; utilization and stubble height triggers by vegetation community, livestock distribution, and plant production/drought stress.

1. Utilization and Stubble Height

Utilization triggers were developed using the utilization guidelines proved by Holechek et al. (1988). The guidelines provide a range of use associated with rangeland condition. For the purpose of grazing management during times of drought, the BLM has chosen to limit utilization of key species to the lower utilization level. The lower utilization levels are consistent with those suggested for ranges in poor condition. These were chosen due to the reduced vigor and production of range forage plants resulting from drought. The following utilization levels would function as drought response triggers within each respective vegetation community and would trigger the implementation of Drought Response Actions. Stubble height triggers were developed to ensure adequate residual matter remains to maintain riparian plant communities. Generally, stubble heights of 4 to 6 inches provide effective stream bank protection, prevent sedimentation, and maintain or improve plant communities (USDI 1999-2001). Key species would be identified using the ESD for a specific area.

- **Salt Desert Shrub**
 - o 25 % utilization of key species.
- **Sagebrush Grassland**
 - o 30% utilization of key species.
- **Pinyon-Juniper Woodland**
 - o 30% utilization of key species.
- **Mountain Shrub**
 - o 30% Utilization of key species.
- **Riparian Zones**
 - o Four inch stubble height of key riparian species.

2. Livestock\ Wild Horse and Burro Distribution

A pattern of use or distribution of livestock and/or wild horses and burros resulting in a concentration of animals, which contributes to grazing in excess of the aforementioned utilization levels and/or stubble heights, would trigger Drought Response Actions to improve animal distribution and prevent further rangeland degradation.

3. Plant Production/Drought Stress

The following plant production and/or drought stress indicators would trigger Drought Response Actions:

- Drought induced senescence or reduced production of key upland and/or riparian species which results in an insufficient quantity of forage for wildlife, wild horses and burros, and livestock;
- Drought induced senescence of key riparian herbaceous species which results in insufficient plant growth/height to provide for stubble heights equal to or greater than four inches within riparian areas; and

- Noticeable signs of drought stress which impede the ability of key species to complete their life cycle (e.g., drought induced senescence, reduced seed head development, etc.).

4.1 Monitoring Methods

The sections below provide the following summaries of (1) the protocol for each variable to be monitored, including general techniques and key information to be collected and (2) the authors and organizations that developed the protocol. All monitoring data will be recorded on the appropriate monitoring forms and summarized on the Drought Monitoring Summary form (Appendix A).

A. Water

A BLM monitoring protocol does not currently exist to quantify the availability of water for wildlife, wild horses and burros and livestock. Therefore field observations and professional judgment will be used to determine if an adequate amount of water is available. Water will be rating using the criteria described in section 4.0 (A) of this document.

B. Utilization and Stubble Height

The key species method will be used to determine utilization levels. This method is adapted to areas where perennial grasses, forbs and/or browse plants are the key species. This method is rapid. A key species is determined for the monitoring location based on the vegetation community defined in the Ecological Site Description correlated to the location. A transect bearing and distance between observation points is selected. Utilization levels are based on an ocular estimate of the amount of forage removed by weight on individual key species and observations are recorded in one of seven utilization classes rather than as a precise amount. Different examiners are more likely to estimate utilization in the same classes than to estimate the same utilization percentages (USDA and USDI 1996). Utilization estimations are improved through a calibration process prior to the collection of utilization data. Sampling techniques include; walking the pre-determined transect, stopping at the pre-determined interval and estimating and recording the percent utilization of the key species nearest the toe.

The stubble height method will be used to determine stubble heights within riparian areas and areas identified for targeted grazing. Stubble height standards and measurements have been used primarily in riparian areas; however, this method may also be used for upland sites. The concept of this method is to measure stubble height, or height (in centimeters or inches) of herbage left un-grazed at any given time. This method, because of its simple application, is becoming a well-accepted method for expressing rangeland use (USDA and USDI 1996). A key species is determined for the monitoring location based on the vegetation community defined in the Ecological Site Description correlated to the location. A transect bearing and distance between observation points is selected. Sampling techniques include; walking the pre-determined transect, stopping at the pre-determined interval and measuring and recording the stubble height of the key species nearest to the toe.

A complete description of these methods, as well as a copy of the appropriate monitoring forms can be found in the Utilization Studies and Residual Measurements Interagency Technical Reference 1996.

C. Livestock\Wild Horse and Burro Distribution

The Landscape Appearance Method will be used to determine the distribution of livestock, and wild horse and burros across allotments and/or HMAs determined to be affected by drought. This method is adapted to areas where perennial grasses, forbs, and/or browse plants are present and to situations where utilization data must be obtained over large areas using only a few examiners. The method uses an ocular estimate of forage utilization based on the general appearance of the rangeland (USDA and USDI 1996). Utilization levels are determined by comparing observations with written descriptions of each class. A transect bearing and distance between observation points is selected. Sampling techniques include; moving along the pre-determined transect, stopping at the pre-determined interval and estimating and recording the utilization class at each observation point.

A complete description of this method, as well as a copy of the appropriate monitoring form can be found in the Utilization Studies and Residual Measurements Interagency Technical Reference 1996.

D. Plant Production and Drought Stress

Visual appraisal of production will be used to determine the amount of forage currently available for wildlife, wild horses and burros and livestock. Visual appraisal of production is an efficient means to check whether forage supply and demand are in balance (Allison 2001). Areas determined to be affected by drought will be visited and a visual appraisal of production will be completed. Areas visited will receive one of the following production scores as defined in Allison (2001):

Production Scores		
1.	Extreme Drought	No growth occurred this year.
2.	Below-Average Production	Production appears less than most years.
3.	Average Production	Production is comparable to most years.
4.	Above-Average Production	Production is greater than most years.
5.	Extremely Wet Year	Excellent growing season. Range production is at maximum potential.

Current year's production will be compared to production data collected in past years. When production data is not available "average production" will be determined for the monitoring location through professional judgment, consultation with local permittees, and based on the normal production as defined in the Ecological Site Description correlated to the location.

A complete description of this method can be found in the Level II monitoring section of Allison, C.D., Baker, T.T., Boren, J.C., Wright, B.D., and Fernald, A. 2001. Monitoring Rangelands in New Mexico: Range, Riparian, Erosion, Water Quality and Wildlife. Range Improvement Task Force, Agricultural Experimental Station, Cooperative Extension Service, New Mexico State University, College of Agricultural Experiment Station, Cooperative Extension Service, New Mexico State University, College of Agricultural and Home Economics,

Report 53. 60 pp. Also as referenced in the short term monitoring section of Volume 1 of the Monitoring Manual for Grassland, Shrubland and Savanah Ecosystems by Herrick et al. (2005). Drought stress will be monitored using VegDRI with site visits occurring to ground truth VegDRI reports. VegDRI is a hybrid drought monitoring and mapping tool that integrates satellite observations of vegetation status and climate data with information on land cover, soil characteristics, and other environmental factors. VegDRI reveals vegetation conditions as plants respond to solar energy, soil moisture, and other limiting factors (USGS 2010). Site visits will be used to inspect plants for signs of drought stress. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence and plant death. A BLM monitoring protocol does not currently exist to quantify signs of drought stress. Therefore field observations and professional judgment will be used to determine and record signs of drought stress on the Drought Monitoring Summary form.

V. Data Management

Field worksheets, maps and drought monitoring summaries will be stored in the short term/ long term monitoring files for the respective allotment and/or HMA. GPS points of monitoring locations will be uploaded into GIS. All GIS information will be kept to Battle Mountain District and Nevada State Office standards and will be incorporated into the Battle Mountain Districts GIS data base.

VI. Management Actions as a Result of Drought Detection and Monitoring

Triggers will, either separate or in combination, activate drought response actions as described in the Battle Mountain District Drought Management Environmental Assessment and the Battle Mountain District Drought Management Plan. All actions will be implement through the issuance of full force and affect decisions Pursuant to 43 CFR §4110.3-3(b).

Literature Cited

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Appendix A – Drought Monitoring Summary Form

DOUGHT MONITORING SUMMARY

Allotment/HMA Use Area UTMS N: _____ E: _____

Vegetation Community: ☐ Salt Desert Shrub ☐ Mountain Shrub ☐ Riparian Zone ☐ Monotypic Invasive Annual
☐ Sagebrush Grassland ☐ Pinyon-Juniper Woodland ☐ Mojave Desert Ecological Site _____

Examiner(s): _____ Date: _____

Drought Indicators: U.S. Drought Monitor Report: ☐ Moderate ☐ Severe ☐ Extreme ☐ Exceptional Release Date: _____

VegDRI Report: ☐ Normal ☐ Pre-Drought ☐ Moderate ☐ Severe ☐ Extreme Release Date: _____

Drought Indicators verified: ☐ Yes ☐ No Rationale: _____

Drought Response Triggers:

Forage

Average Stubble height ¹ (inches)	Average Utilization ²	Normal Production Expected for Site ³	Production Score ⁴	Remarks/Rationale (Include any other observations such as: erosion, animal stress, hazardous fuels etc.)

Water ☐ Available ☐ Unavailable Rationale: _____

Signs of Drought Stress ☐ Present * ☐ Not Present * If present, check what signs of drought stress were observed

☐ Reduced shoot & leaf growth ☐ Reduced seed head development ☐ Induced senescence ☐ Plant death

Rationale: _____

Livestock/Wild Horse and Burro Distribution

Describe the current utilization pattern across the allotment/HMA including the average utilization recorded on the associated Landscape Appearance data forms and any livestock and/or wild horse and burro observations:

Drought Response Action Recommendations: _____

¹Average stubble height. Use the stubble height method and form as outlined in Utilization Studies and Residual Measurements. BLM Technical Reference (1996). Stubble height will only be recorded in areas outlined in the Battle Mountain District Drought Monitoring Plan.

²Average utilization. Use the key species method and form as outlined in Utilization Studies and Residual Measurements. BLM Technical Reference (1996).

³Normal production expected for site. Use previously collected quantitative production data for the allotment/HMA. When production data is not available "normal production" will be determined through professional judgment, consultation with local permittees, and referencing the Ecological Site Description correlated to the location.

⁴Production score. 1. Extreme Drought (no growth this year) 2. Below Average Production 3. Average Production 4. Above-Average Production 5. Extremely Wet Year (production is at maximum potential)

Attachment 2 – Battle Mountain District Drought Management Plan

Battle Mountain District

Drought Management Plan

3/7/2012

This management plan contains a description of drought response actions that would be used to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions. The drought response actions would be implemented either separate or in combination upon reaching the criteria described under the Proposed Action of the Battle Mountain District Drought Management EA. A more in depth discussion of these criteria can be found in the Drought Monitoring and Detection Plan

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Battle Mountain District Drought Management Plan

I. Introduction

Drought, a normal part of the climate for virtually all regions of the United States, is of particular concern in the West, where an interruption of the region's already limited water supplies for extended periods of time can produce devastating impacts (Wilhite 1997). The Battle Mountain District (BMD) is located within the Central Basin and Range and Mojave Basin and Range ecoregions defined by the Western Ecology Division of the United States Environmental Protection Agency. Drought is considered to be a recurring event within both ecoregions. The early detection and prompt response to drought is needed to prevent further degradation to affected resources within the BMD. The purpose of this management plan is to describe the drought response actions that would be implemented either separate or in combination upon reaching the criteria described within the Proposed Action of the Battle Mountain District Drought Management EA and further defined in the Battle Mountain District Drought Detection and Monitoring Plan. Drought response actions are designed to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions. They have been placed into two categories, livestock and Wild Horses and Burros. These have been separated due to the differing nature and capabilities for management of Wild Horses and Burros and Livestock.

II. Goals

The early response to drought conditions is necessary for effective management during drought. Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurrow and Taylor 1999). The following list outlines the goals of the Battle Mountain District Drought Management Plan:

Goal 1: Provide for the prompt response to drought conditions.

Goal 2: Prevent further degradation to affected resources on lands affected by drought within the BMD.

Goal 3: Clearly define Drought Response Actions that will be used to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought.

Goal 4: Prevent the suffering and death of Wild Horses and Burros as a result of reduced forage and water resources due to drought conditions.

III. Drought Response Actions

The following drought response actions would be implemented either separately or in combination upon reaching the criteria described under the Drought Response Triggers section. A more in depth discussion of each action can be found in the Drought Management Plan (Attachment 2). Drought response actions have been placed in two categories: livestock and wild horses and burros. These have been separated due to the differing nature and capabilities for management of livestock and wild horses and burros.

3.1 Livestock

The following is a list of drought response actions that would be used either separately or in combination to reduce the impacts of authorized livestock grazing on natural resources during drought.

A. Partial or complete closure of an allotment(s)

During drought, the forage resources and overall condition of affected allotments would be assessed. Portions of an allotment(s) that lack forage and/or water, are in poor condition, or are identified as critical areas to provide forage and/or water for wildlife and/or wild horses and burros could be closed to livestock grazing for the duration of the drought. Partial closures would be accomplished by employing a combination of the other DRAs such as temporary fencing, temporary water hauls, active livestock herding, strategic supplementation etc. If it is determined that aforementioned conditions exist over the entire allotment(s), complete closure would occur. Closures would be in effect for the duration of the drought plus one growing season following the cessation of the drought to allow for recovery.

B. Partial Reduction in Animal Unit Months (AUMs)

During drought, a reduction in livestock numbers could be necessary to ensure that adequate forage is available to meet wild horses and burros and livestock requirements. Reduced livestock grazing would prevent overutilization of key forage species and prevent further adverse impacts to rangeland resources that are already affected by drought.

C. Change in season of use

A change in the season of use could reduce livestock grazing related impacts during drought. The following modifications could be used either separately or in combination:

- Changing the season of use to a time following the critical growth period (actual dates will vary with vegetation community type) of key forage species (ESDs correlated specific locations will be consulted to determine key species). This would allow plants to utilize available soil moisture and any additional moisture received during the critical

growth period. Plants would be able to complete their life cycle thus allowing for seed dissemination and root growth and replacement. Plants could then be grazed after sufficient growth or dormancy occurs. Repeated grazing during the critical growth period does not allow plants to regrow before soil moisture is depleted; therefore, plants may not have adequate resource reserves to survive winter dormancy.

- Defer livestock grazing in riparian areas during the hot season (approximately July 1 through September 30) to avoid the degradation of riparian areas during drought.

D. Reduced grazing duration

Moving livestock across an allotment or pasture more quickly would increase the amount of rest individual plants are given. Reducing grazing duration would increase a plant's ability to utilize available resources to regrow foliage, store carbohydrates reserves, and maintain vigor. Plants are unable to regrow if grazed repeatedly especially during times of limited soil moisture.

Periods of deferment should be varied according to the rate of growth. Range plants initiate growth from meristems (i.e., growing points), once meristems are removed, plants must grow from basal buds which requires much more of the plants energy than regrowth from meristems.

Plants that are continually forced to regrow from buds may reduce or even eliminate the production of new buds, which may reduce production in subsequent years (Howery 1999).

During stress periods such as drought, growth slows and plants should be rested longer (Hanselka and White 1986). Reducing the duration of grazing would provide plants more time to recover after grazing pressure is removed.

E. Change in livestock management practices

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and periods of below average precipitation compound the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). Modification of grazing practices would improve livestock distribution. The following methods/tools could be used either separately or in combination to improve livestock distribution:

- Strategic placement of salt and/or mineral supplements away from water and in areas that were un-grazed or lightly grazed in previous years.
- Increased herding of livestock to previously un-grazed or lightly grazed areas.
- Concentrating livestock into a single herd in order to increase control and encourage uniform grazing. This would force livestock to utilize more of the less-preferred plants while limiting repetitive or selective grazing of preferred forage species. Herd sizes would be dependent on water availability; therefore, adequate water sources must be present to provide water to wildlife, wild horses and burros and livestock while maintaining riparian functionality. Use would not exceed utilization and stubble heights identified in the Drought Response Triggers section of this document.

F. Temporary fencing of critical areas

During drought, temporary electric fencing could be used to exclude livestock from critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat etc. Temporary electric fences may also be used to confine livestock to areas dominated by invasive annual species. Temporary electric fences would be constructed using ¾ inch to 1 inch diameter fiberglass fence posts and two strands of electric fence polywire. The height of the fence would be 30 inches (Hot wire) with the bottom wire being 20 inches (ground wire) above the ground. Signs warning of electric fence would be firmly attached to the fence at common crossing points and at ¼ mile intervals along the fence.

G. Targeted grazing of monotypic invasive annual communities

Targeted grazing of monotypic invasive annual communities (e.g., cheatgrass) could be used to alleviate grazing pressure on other areas that are dominated by native species. On these sites, prescribed livestock grazing could be applied to achieve maximum damage to annual grasses with little concern for non-target plants (Peischel and Henry 2006). Grazing would be focused during the spring and/or fall months to take advantage of early spring and fall growth of the annuals. Livestock would be removed upon reaching a two-inch average stubble height in order to provide some protection from wind and water erosion. Animals would be confined to these areas using temporary electric fence or herding. If an existing water source is not available, the use of temporary water hauls or temporary above ground pipelines may be used.

H. Temporary change in kind or class of livestock

According to Volesky et al. (1980), yearling cattle utilize pastures more uniformly over variable terrain than cows with calves or mixed classes. Cows and calves utilize forages nearest the water much more heavily than do yearlings. Therefore, selecting yearlings would improve grazing distribution and limit impacts to riparian areas.

Choosing a different kind of livestock could also affect how a range can be utilized. With their large mouths, cattle and horses may not select annual grasses as readily as sheep or goats because livestock prefer plants they can eat quickly and efficiently. Sheep or goats can get a full bite of annual grasses more easily than cattle or horses, especially when annual grass plants are small (Peischel and Henry 2006). Additionally, sheep and goats can be herded more effectively which allows for greater control and provides an opportunity to limit impacts to critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat, etc.

I. Temporary water hauls

Temporary water hauls could be used in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Additionally, the BLM could authorize the use of temporary water hauls to augment existing water sources. Whenever possible, water haul sites would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and bird ramps would be installed in water troughs to protect avian species. All temporary water hauls must be authorized in writing and would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

J. Temporary above ground pipelines

Temporary above ground pipelines could be implemented in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Whenever possible, temporary pipelines would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Temporary pipelines would consist of an above ground pipeline, which would transport water from the end point of an existing pipeline to livestock water troughs of various size and material, placed on public lands and fitted with a float valve to prevent overflow and saturated soil conditions around the trough(s). Saturated soils are at a greater risk for compaction or erosion. Any temporary above ground pipelines would require approval from the Nevada Division of Water Resources. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and no new ground disturbance associated with the installation of a temporary pipeline(s) would be authorized. Bird ramps would be installed in water troughs to protect avian species. All temporary above ground pipelines must be authorized in writing and would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

3.2 Wild Horses and Burros

The following is a list of Drought Response Actions that would be used either separately or in combination to ensure the welfare of wild horses and burros on public lands administered by the BLM. Wild horses and burros could be at risk of dehydration or starvation due to drought conditions, special considerations are needed for the management of wild horses and burros during drought. These Drought Response Actions would help reduce the impacts of wild horses and burros on natural resources adversely affected by drought while ensuring their welfare.

A. Temporary Water Hauls

In circumstances where it is determined that adequate forage exists to maintain the existing population of wild horses and/or burros, but water resources are deficient due to drought conditions, the BLM could employ temporary water hauls to augment existing water sources. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Water haul locations would be determined based on animal population density and distribution, and placed in previously disturbed areas such as gravel pits or roadsides. Troughs could be placed at the existing water sources that are either dry or inadequate to maintain healthy animals. The use of water hauls would continue until the existing waters are able to support the population or a drought gather occurs. All areas would be surveyed for cultural resources prior to implementation and bird ramps would be installed in water troughs to protect avian species.

B. Wild horse and burro removal

When it is determined that drought conditions have resulted in insufficient amounts of forage and/or water to support the existing population of wild horses and/or burros within a herd management area (HMA) a drought gather would be conducted. Wild horses and burros would be removed from the range in order to prevent suffering and death due to drought conditions on the range and prevent further degradation of resources affected by drought. Gathers would be completed by removing varying numbers and using the following methods, either separate or in combination:

1. Helicopter capture

The helicopter-drive trapping method would be the primary gather technique. The use of roping from horseback could also be used when necessary. Multiple gather sites (traps) could be used to gather wild horses and/or burros from within and/or outside the HMA boundaries.

2. Bait or water trapping

Where appropriate, the BLM could employ bait and/or water trapping in order to capture wild horses or burros that need to be removed from the range in response to drought.

Bait and water trapping involves the construction of small pens, and baiting animals into the pens with the use of hay, water or other supplements. Specialized one-way gates are often used to

prevent the animals from leaving the trap once inside. Bait and water trapping methods are usually only effective in areas where water or forage is absent, resulting in high motivation for animals to enter the trap to access them. These situations may occur during drought emergencies or severe winters. Typically, small groups of animals enter the traps at a time. This requires many days too many weeks to remove a substantial number of animals from an area. This option could be employed where small numbers of animals need to be removed, where it is deemed that the geography and resources of the HMA would ensure success, or in combination with helicopter gathers.

3. Removal numbers

Removal numbers would be based on the assessment of forage, climate, water, rangeland health and the use of the range by wild horses or burros. Removal numbers would be identified to ensure that healthy animals remain on the range and have adequate resources for survival, and that rangeland degradation is minimized in order to allow for post drought recovery. The long term health and welfare of the wild horses and burros would be the overarching goal of a drought gather. The removal numbers would be determined on an HMA by HMA basis. A summary of the data, and rationale for the removal numbers would be documented in the Decision issued prior to a gather commencing.

a. Removal of sufficient numbers of animals to achieve the low range of AML

Where the assessment of forage and water indicates that some relief is needed through removal of excess wild horses and/or burros, a gather could be conducted to achieve the established low range of AML. This would occur where the current population exceeds the low AML, and adequate resources do not exist to maintain healthy wild horses or burros at the current population level. This option could be implemented in combination with temporary water hauls.

b. Removal of sufficient animals to achieve the high AML

This situation would apply when the population is in excess of the high AML, and assessment of existing forage and water resources warrants limited removal of wild horses and/or burros to the high AML. This would also be implemented to restrict the number of animals removed due to constraints on holding space and long term holding costs. This option could be implemented in combination with temporary water hauls.

c. Removal of animals to a point below the low AML

During a prolonged drought, forage and water resources could become severely limited to a point that wild horses and/or burros must be removed below the low range of AML in order to prevent widespread suffering and death. The post gather population target would be determined based on the existence and reliability of remaining resources. This option would be implemented in order to prevent subsequent emergency conditions due to ongoing or worsening drought conditions. This option could be implemented in combination with temporary water hauls.

d. Complete removal of all animals in an HMA

In extreme situations, the complete lack of forage and/or water in certain locations could warrant the removal of all locatable wild horses and burros to prevent their death. This situation would only apply as a last resort, and could involve holding wild horses or burros in contract facilities with release back to the range when adequate resources exist. If complete removal and subsequent release is chosen, population control methods could be implemented prior to wild horses being released back to the HMA. Population controls would not be implemented in burro populations.

Population controls applied to wild horses released back to the range would be used to slow population growth rates, lengthen the time before another gather is necessary and enhance post drought resource recovery. Population controls include the application of fertility control vaccine to mares, and sex ratio modification to favor studs. Fertility control vaccines would be applied to all mares released to the range. Sex ratio adjustments could be applied alone or in combination with fertility control. Sex ratio adjustments would involve the release of studs and mares in a 60:40 ratio (favoring studs). In extreme cases, where it is determined that fewer mares should be released to provide for animal welfare and the health of mares, fewer mares could be released resulting in sex ratios of 70:30. This would occur when large numbers of animals need to be removed from the range due to resource conditions and releasing additional studs would result in fewer horses needing to be removed from the range.

4. Type of removals

Under normal gather operations, all located wild horses are captured. The desired number of horses for release and removal are then identified through a “selective removal” process. For drought related gathers gate cut removals would be implemented. Gate cut removals would be used to limit any additional stress on the wild horses and burros within a defined gather area. In this situation, wild horses or burros would be gathered and removed regardless of age to reach the post gather target. No animals would be returned to the range and no population controls would be implemented. The post gather target number of animals would remain undisturbed on the range. Gathers would be designed to remove animals from the areas most affected by drought and resource deficits. Gathers of burros are typically Gate Cut gathers.

5. General gather info

The BLM would make every effort to place gather sites in previously disturbed areas, but if a new site needs to be used, a cultural resource inventory would be completed prior to using the new gather site. No gather sites would be set up near greater sage-grouse leks, known populations of Sensitive Species; or in riparian areas, cultural resource sites, Wilderness Study Areas (WSAs) or congressionally designated Wilderness Areas. All gather sites, holding facilities, and camping areas on public lands would be recorded with Global Positioning System equipment, given to the Battle Mountain District Invasive, Non-native Weed Coordinators, and then assigned for monitoring during the next several years following gather for invasive, non-native weeds. All gather and handling activities (including gather site selections) would be conducted in accordance with SOPs in Appendix A.

Gathered wild horses or burros would be sorted by age and sex and be transported to BLM holding facilities where they would be prepared for adoption and/or sale to qualified individuals who can provide them with a good home or for transfer to long-term grassland pastures. During gathers conducted during summer months, foals are often too young to wean. This is especially true during periods of stress when, due to the poor resources on the range, the mare's milk production is limited and foals are small or weak. In any case, the foals would be re-united with the mares (or jennies) as soon as sorted at the holding corrals. Efforts would be taken to identify foals and mares for pairing and carefully observe their behavior. Should foals be orphaned, foster homes would be found immediately that could provide supportive care.

Herd health and characteristics data would be collected as part of continued monitoring of the wild horse herds. Other data, including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded for all gathered wild horses. Genetic baseline data could be collected to monitor the genetic health of the wild horses within the combined project area.

An Animal and Plant Inspection Service (APHIS) or other veterinarian may be on-site during the gather, as needed, to examine animals and make recommendations to the BLM for care and treatment of wild horses. All excess wild horses removed from within and outside the HMAs would be available for adoption or sale to qualified individuals.

Any old, sick or lame horses or burros unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score (BCS) of 3 or with serious physical defects such as club feet, severe limb deformities, or sway back would be humanely euthanized as an act of mercy. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041).Refer to:

http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html

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APPENDIX A

Wild Horse Gather Plan and Standard Operating Procedures

I. Gather Plan

The purpose of the gather plan is to outline the methods and procedures for conducting drought gather(s) to remove drought affected wild horses and/or burros from public lands administered by the BMDO. Gather specific details would be discussed in a Decision issued prior to gather commencement.

A. Gather Area

The Gather Area could include any of the 28 wild horse or burro HMAs administered by the BMDO, including areas outside of HMA boundaries and Herd Areas. Refer to Map 3, which display the HMAs administered by the BMDO.

B. Administration of the Contract /Gather Operations

The National Wild Horse and Burro Gather Contract would be used to conduct drought gathers. BLM personnel would be responsible for overseeing the contract for the capture, care, aging, and temporary holding of wild horses from the capture area. BLM WH&B Specialists would be present during all aspects of the gather activities. BLM personnel may conduct small scale helicopter or bait/water trapping gathers.

Standard Operating Procedures (SOPs) described within this document would be utilized for the capture and handling of wild horses and burros. SOPs have been developed over time to ensure minimal impacts associated with gathering, handling, and transporting wild horses and burros and collecting herd data.

Gather “trap” corrals and central holding corrals would be necessary to complete the gather. Ideally, gather corrals would be established in areas of previous soil or vegetation disturbance (such as gravel pits, roads etc.), to avoid impacts to unaltered vegetation and soils. A cultural resources investigation would be conducted prior to the construction of gather corrals and temporary holding facilities. Refer to the SOPs, Section H for more detailed information.

A notice of intent to impound would be made public prior to the gather. Branded and/or claimed horses or burros would be transported to a temporary holding facility. Ownership would be determined under the estray laws of the State of Nevada by a Nevada Brand Inspector. Collection of gather fees and any appropriate trespass charges would be collected per BLM policy and regulation.

An APHIS or private veterinarian would be on-call or on-site for the duration of the gather to provide recommendations to WH&B Specialists for care and treatment of sick or injured wild horses or burros. Consultation with the veterinarian may take place prior to the euthanasia of wild horses in accordance with Washington Office Instruction Memorandum (IM 2009-041). Refer to Part H for more information about the euthanasia policy.

Precautions would be taken to ensure that young or weak foals are safely gathered and cared for appropriately. If a foal were determined to be an orphan, qualified adopters would be contacted

immediately to provide proper care for the foal. Milk replacer formula and electrolytes would be available to care for orphan foals if necessary.

C. General Overview of Wild Horse and Burro Gather Methods

The gather contractor supplies and transports all equipment needed to conduct a gather to a central location where Holding Corrals are constructed. These corrals consist of six or more pens constructed of sturdy panels, with a central alleyway and working/squeeze chute in the center. Corral panels are covered with snow fencing to keep animals calm, and water tanks located within the pens. The central alley and pen arrangement allows the BLM staff and the contractor to sort recently captured animals, separating animals to ship to the adoption facilities, and mares/jennies and foals from stallions/jacks to prevent fighting and injury. The pen arrangement allows the contractor to off-load animals from stock trailers into the pens, and facilitates the loading of the animals to be transported to facilities onto large straight deck trucks.

At various locations throughout the HMA, smaller sets of gather corrals are constructed called “traps”. The trap or gather corrals consists of a series of pens made out of panels, and “wings” made out of jute netting that funnel wild horses or burros into the corrals as they are captured. Once captured, they are loaded into stock trailers and transported to the central Holding Corrals for sorting. Horses and burros may remain in the gather site or on the stock trailer for no time at all, or up to an hour or more while other groups of animals are brought to the gather corrals.

The contractor utilizes a helicopter and pilot to conduct gathers. Use of a helicopter is humane, safe and effective. Methods for use of helicopter are well established, and the contract pilots very skilled. Wild horses and burros settle down once gathered and do not appear to be more than slightly annoyed by the helicopter.

The pilot locates groups of wild horses and burros within the HMA and guides them towards the gather corrals. In most cases, animals are allowed to travel at their own pace, and are not “pushed”. Distances average 4-7 miles over mixed terrain which may consist of rolling foothills, or steeper terrain, drainages, ridges and valley bottoms. The horses and burros often follow their own trails. The pilot and the BLM staff monitor the condition of the animals to ensure their safety, checking for signs of exhaustion, injuries etc. The contractor and pilots are very skilled at designing and building gather corrals, and safely herding the horses and burros to them. Generally, wild horses and burros are very fit, and recover quickly from being captured. Distances that the animals travel are modified to account for summer temperatures, snow depth, animals in weakened condition, young foals, or older/lame animals. Under ideal conditions, some animals could be herded 10 miles or more at the discretion of the COR/WH&B Specialist.

Once near the gather site, the contractor holds a “Prada” horse at the mouth of the wings. As the pilot pushes the wild horses and burros closer, the Prada horse is released, who then runs into the gather corrals, leading all of the wild horses and burros with him. Crewmembers rush in to secure gates once the animals are within the corrals. Wild burros are less encouraged to enter the trap corrals and oftentimes riders on horseback come in behind them to push them the rest of the way. Burros are known to stop in the wings and refuse to enter the trap. They are also more difficult to work through the alleyway and pens.

During summer gathers, the crew often separates foals from adults at the gather site so that they may be transported to the Holding Corrals separately and avoids being injured by adult animals. Foals may be loaded into a separate stock trailer where they can have shade, water, and electrolyte if necessary. Once unloaded at the Holding Corrals, foals may be rejoined with the mothers if not old enough to wean, and monitored to ensure that all of the foals “join-up”. Often paint marks are applied to the foals and mothers to assist the contractor and BLM staff in identifying pairs.

Occasionally (and more frequently for difficult to gather areas) helicopter-assisted roping is implemented, in which the pilot moves a small group of animals to the gather area, which the crewmembers rope by horseback. This method often prevents overstressing the horses or burros from repeated attempts to move them into the gather corrals. The roped animals are then led to the corrals, to awaiting stock trailers, or immobilized on the ground until they can be loaded into stock trailers.

Once horses or burros are loaded and transported to the Holding Corrals, they are sorted by the contractor’s staff and BLM employees. The contractor looks at the animals’ teeth to estimate age while held in the chute, and the BLM staff documents age, color, body condition and lactation status of the horse or burro. Aging wild horses, and especially burros is a process of estimation due to the type of wear that can occur to the teeth of a wild horse or burro on the range.

Injuries are noted and treated if needed. Once sorted, the animals are normally given hay and unlimited water, if no health concerns exist. During this time, the BLM may consult with a veterinarian to treat sick or injured animals, or make recommendations for euthanasia.

When the pens hold enough horses or burros to transport to the BLM adoption facility, they are loaded into the straight deck trailers that hold 35-45 wild horses depending upon their size. The trailers have three compartments so that mares/jennies, stallions/jacks and foals can be transported separately. It may require 3-8+ hours for the wild horses or burros to arrive at the adoption preparation facility. The BMDO typically ships horses to National Wild Horse and Burro Center at Palomino Valley near Sparks, Nevada; or may ship horses to the facility at Ridgecrest, California Arizona, Gunnison Correctional Facility in Gunnison, UT, or Indian Lakes Facility in Fallon, NV if needed.

During sorting, the BLM staff identifies wild horses to be re-released back to the HMA according to the objectives for the herd. Typically, wild burros are not released to the range. Mares may be held until the end of the gather so that fertility control can be given to them to slow future population growth rates. When it is time for the release, the mares and stallions are each loaded into separate stock trailers and transported back inside the HMA near water sources, if possible. The rear of the trailer is opened up, and the horses are allowed to step off and travel back into the HMA. Sometimes the horses are released directly from the holding corrals if they are centrally located within the HMA.

Before the wild horses or burros are transported to adoption facilities or released, hair is sampled for genetic testing. Data collected during the gather in conjunction with genetic analysis report will be incorporated into a Herd Management Area Plan (HMAP) in the future.

D. Data Collection

WH&B Specialists would be responsible for collecting population data. The extent to which data is collected may vary among the field offices to meet specific needs pertaining to each HMA.

1) Hair Samples/Genetics Analysis

Hair samples could be collected and analyzed to establish genetic baseline data of wild horses and burros (genetic diversity, historical origins, unique markers, and norms for the population).

WHB Specialists could collect a minimum sample size of 25 hair samples from both females and males in a ratio similar to the sex ratio released. Age would not be a defining factor in determining which animals to sample. Samples would be sent to Texas A&M University for analysis.

2) Herd Health and Viability Data Collection

WHB Specialists would document information related to age, sex, color, overall health, pregnancy, or nursing status from each animal captured. An estimate of the number of animals evading capture would also be recorded.

Information on reproduction would be collected to the extent possible, through documentation of the wild horses and burros captured during the gather, and the age of any horses released following the gather.

3) Characteristics

WHB Specialists would record color and size of the animals, and any characteristics as to type would be noted, if determined. Any incidence of negative genetic traits (parrot mouth, club foot etc.) or other abnormalities would be noted as well.

4) Condition Class

A body condition class score would be recorded based on the Henneke System. This would be recorded for the population in general and/or for specific animals if necessary.

E. Euthanasia

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with BLM policy as expressed in Washington Office Instructional Memorandum No. 2009-041. A veterinarian may be called to make a diagnosis and final determination. Current BLM SOP is to have a Veterinarian from APHIS on site throughout the gather to observe animal health and condition and provide input to BLM staff regarding the potential need to euthanize wild horses or burros on gathers. Euthanasia shall be done by the most humane method available. Authority for humane euthanasia of wild horses or burros is provided by the Wild Free-Roaming Horses and Burros Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Euthanasia of

Wild horses and Burros and Disposal of Remains. The following are excerpted from IM 2009-41:

A Bureau of Land Management (BLM) authorized officer will euthanize or authorize the euthanasia of a wild horse or burro when any of the following conditions exist:

- (1) Displays a hopeless prognosis for life;*
- (2) Is affected by a chronic or incurable disease, injury, lameness or serious physical defect (includes severe tooth loss or wear, club foot, and other severe acquired or congenital abnormalities);*
- (3) Would require continuous treatment for the relief of pain and suffering in a domestic setting;*
- (4) Is incapable of maintaining a Henneke body condition score (see Attachment 1) greater than or equal to 3, in its present environment;*
- (5) Has an acute or chronic illness, injury, physical condition or lameness that would not allow the animal to live and interact with other horses, keep up with its peers or maintain an acceptable quality of life constantly or for the foreseeable future;*
- (6) Where a State or Federal animal health official orders the humane destruction of the animal(s) as a disease control measure;*
- (7) Exhibits dangerous characteristics beyond those inherently associated with the wild characteristics of wild horses and burros.*

When euthanasia will be performed and how decisions will be made and recorded in a variety of circumstances is described below.

Euthanasia in field situations (includes on-the-range and during gathers):

(A) If an animal is affected by a condition as described in 1-7 above that causes acute pain or suffering and immediate euthanasia would be an act of mercy, the authorized officer must promptly euthanize the animal.

(B) The authorized officer will report actions taken during gather operations in the comment section of the daily gather report (Attachment 2). Documentation will include a brief description of the animal's condition and reference the applicable criteria (including 1-7 above or other provisions of this policy). The authorized officer will release or euthanize wild horses and burros that will not tolerate the handling stress associated with transportation, adoption preparation or holding. However, the authorized officer should, as an act of mercy, euthanize, not release, any animal which exhibits significant tooth loss or wear to the extent their quality of life would suffer.

(C) If euthanasia is performed during routine monitoring, the Field Manager will be notified of the incident as soon as practical after returning from the field.

I. Special Stipulations

- 1) Private landowners or the proper administering agency(s) would be contacted and authorization obtained prior to setting up gather corrals on any lands which are not administered by BLM. Wherever possible, gather corrals would be constructed in such a manner as to not block vehicular access on existing roads.
- 2) Gather corrals would be constructed so that no riparian vegetation is contained within them. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.
- 3) The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. No unnecessary flying would occur over big game on their winter ranges or active fawning/calving grounds during the period of use.
- 4) Standard operating procedures in the site establishment and construction of gather corrals will avoid adverse impacts from gather corrals, construction, or operation to wildlife species, including threatened, endangered, or sensitive species.
- 5) Archeological clearance by a BLM archaeologist or District Archeology Technician of gather corrals, holding corrals, and areas of potential effects would occur prior to construction of gather corrals and holding corrals. If cultural resources were encountered, those locations would not be utilized unless they could be modified to avoid impacts. Due to the inherent nature of wild horse gathers, gather corrals and holding corrals would be identified just prior to use in the field. As a result, Cultural Resource staff would coordinate with WH&B personnel to inventory proposed locations as they are identified, and complete required documentation.
- 6) Wilderness Study Areas: When gathering wild horses from within Wilderness Study Areas (WSAs), applicable policy will be strictly adhered to. Only approved roads will be traveled on. A Wilderness Specialist or designee would be present to ensure that only inventoried ways or cherry stemmed roads are traveled on by vehicles within the WSA.
- 7) Wildlife stipulations
The following stipulations would be applied as appropriate.
 - a. Sage Grouse
 - i. Avoid active leks (strutting grounds) by 2 miles. March 1- May 15
 - ii. Avoid nesting and brood rearing areas (especially riparian areas where broods concentrate beginning usually in June) by 2 miles. April 1 – August 15
 - iii. Avoid sage grouse wintering areas by 2 miles while occupied. Most known wintering grounds in the Shoshone-Eureka Resource Area occur at high elevations and are not likely to be affected. Dates vary with severity of winter

- iv. Minimize and mitigate disturbance to the vegetation in all known sage grouse habitat.
- b. Ferruginous Hawk: Avoid active nests by 2 miles. March 15- July 1.

II. Standard Operating Procedures for Wild Horse and Burro Gathers

Gathers would be conducted by utilizing contractors from the National Wild Horse and Burro Gather Contract, or BLM personnel. The following procedures for gathering and handling wild horses or burros would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse Aviation Management Handbook* H-4740-1 (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Gather corrals and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads.

The primary capture methods used in the performance of gather operations include:

1. Helicopter Assisted Trapping. This capture method involves utilizing a helicopter to direct wild horses or burros into a temporary corral.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses or burros into a temporary corral.

The following procedures and stipulations will be followed to ensure the welfare, safety, and humane treatment of wild horses and burros in accordance with the provisions of 43 CFR 4700.

A. Capture Methods used in the Performance of Gather Contract Operations

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:

All gather corral and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move corral locations as determined by

the COR/PI. All gather corrals and holding facilities not located on public land must have prior written approval of the landowner.

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR who will consider terrain, physical barriers, access limitations, weather, extreme temperature (high and low), condition of the animals, urgency of the operation (animals facing drought, starvation, fire rehabilitation, etc.) and other factors. In consultation with the contractor the distance the animals travel will account for the different factors listed above and concerns with each HMA.
3. All gather corrals, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
 - a. Gather corrals and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for horses, and the bottom rail of which shall not be more than 12 inches from ground level. All gather corrals and holding facilities shall be oval or round in design.
 - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2"x4".
 - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for horses, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet above ground level for horses and 1 foot to 6 feet for burros. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
 - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for horses and 2 feet to 6 feet for burros.
 - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.
4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.
5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or mares with small foals, sick and injured animals, estrays, or other animals the

COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite gather corrals, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.

7. The Contractor shall provide animals held in the gather corrals and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the gather corrals or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. An animal that is held at a temporary holding facility through the night is defined as a horse/horse feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
8. It is the responsibility of the Contractor to provide security to prevent loss, injury, or death of captured animals until delivery to final destination.
9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
10. Animals shall be transported to final their destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the COR/PI for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR/PI. Animals shall not be held in gather corrals and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR/PI. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original gather site. This determination will be at the discretion of the COR.

B. Capture Methods That May Be Used in the Performance of a Gather

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary gather corral. If the contractor selects this method the following applies:
 - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
 - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.
 - c. Gather corrals shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:
 - a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.
 - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor with the approval of the COR/PI selects this method the following applies:
 - a. Under no circumstances shall animals be tied down for more than one half hour.
 - b. The contractor shall assure that foals shall not be left behind, or orphaned.
 - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.
2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.

3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer, which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.
5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping.
6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
 - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
 - 8 square feet per adult horse (1.0 linear foot in an 8 foot wide trailer);
 - 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
 - 4 square feet per horse foal (.50 linear feet in an 8 foot wide trailer).
7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
 - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
 - b. The Contractor shall obtain the necessary FCC licenses for the radio system
 - c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
2. Should the contractor choose to utilize a helicopter the following will apply:
 - a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
 - b. Fueling operations shall not take place within 1,000 feet of animals.

E. Site Clearances

Personnel working at gather sites will be advised of the illegality of collecting artifacts. Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc.). All proposed site(s) must be inspected by a government archaeologist (or designee). Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees.

Gather sites and temporary holding facilities would not be constructed on wetlands, riparian zones or weed infested areas.

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations would be made available to the extent possible; however, the primary considerations will be to protect the health, safety, and welfare of the animals being gathered and the personnel involved. The public

must adhere to guidance from the on-site BLM representatives. It is BLM policy that the public will not be allowed to come into direct contact with wild horses or burros being held in BLM facilities. Only authorized BLM personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at any time or for any reason during BLM operations (refer to Appendix C, D, and E).

H. Responsibility and Lines of Communication

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. Wild Horse and Burros Specialists would serve as the primary COR. Alternate COR and PI(s) would be selected prior to the start of the gather. Marc Pointel, Supervisory Natural Resources and Thomas Seley, Field Manager, TFO will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, National Program Office, and BLM Holding Facility offices. All employees involved in the gather operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Nevada State Office and Battle Mountain District Office Public Affairs Officer. These individuals will be the primary contact and will coordinate with the COR on any inquiries.

The COR will coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition.

The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Should the contractor show negligence and/or not perform according to contract stipulations, he will be issued written instructions, stop work orders, or defaulted.

APPENDIX B

Standard Operating Procedures for Fertility Control Treatment

22-month time-release pelleted vaccine:

The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered only by trained BLM personnel or collaborating research partners.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18-gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14-gauge needle. These are delivered using a modified syringe and jabstick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
4. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
5. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
6. All treated mares will be freeze-marked on the hip or neck HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

Monitoring and Tracking of Treatments:

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine HMA field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at

the field office.

4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office, and State along with the freeze-mark(s) applied by HMA and date.

APPENDIX C

Daily Visitation Protocol and Ground Rules



Daily Visitation Protocol and Ground Rules Gathers



BLM recognizes and respects the right of interested members of the public and the press to observe a wild horse gather. At the same time, BLM must ensure the health and safety of the public, BLM's employees and contractors, and America's wild horses. Accordingly, BLM developed these rules to maximize the opportunity for reasonable public access to the gather while ensuring that BLM's health and safety responsibilities are fulfilled. Failure to maintain safe distances from operations at the gather and temporary holding sites could result in members of the public inadvertently getting in the path of the wild horses or gather personnel, thereby placing themselves and others at risk, or causing stress and potential injury to the wild horses and burros.

The BLM and the contractor's helicopter pilot must comply with 14 CFR Part 91 of the Federal Aviation Regulations, which determines the minimum safe altitudes and distance people must be from the aircraft. To be in compliance with these regulations, the viewing location at the gather site and holding corrals must be approximately 500 feet from the operating location of the helicopter at all times. The viewing locations may vary depending on topography, terrain and other factors.

General Daily Protocol

- A Wild Horse Gather Info Phone Line will be set up prior to the gather so the public can call for daily updates on gather information and statistics. Visitors are strongly encouraged to check the phone line the evening before they plan to attend the gather to confirm the gather and their tour of it is indeed taking place the next day as scheduled (weather, mechanical issues or other things may affect this) and to confirm the meeting location.
- Visitors must direct their questions/comments to either their designated BLM representative or the BLM spokesperson on site, and not engage other BLM/contractor staff and disrupt their gather duties/responsibilities - professional and respectful behavior is expected of all. BLM may make the BLM staff available during down times for a Q&A session. However, the contractor and its staff will not be available to answer questions or interact with visitors.
- Observers must provide their own 4-wheel drive high clearance vehicle, appropriate shoes, winter clothing, food and water. Observers are prohibited from riding in government and contractor vehicles and equipment.
- Gather operations may be suspended if bad weather conditions create unsafe flying conditions.
- BLM will establish one or more observation areas, in the immediate area of the gather and holding sites, to which individuals will be directed. These areas will be placed so as to maximize the opportunity for public observation while

providing for a safe and effective horse gather. The utilization of such observation areas is necessary due to the use and presence of heavy equipment and aircraft in the gather operation and the critical need to allow BLM personnel and contractors to fully focus on attending to the needs of the wild horses and burros while maintaining a safe environment for all involved. In addition, observation areas will be sited so as to protect the wild horses from being spooked, startled or impacted in a manner that results in increased stress.

- BLM will delineate observation areas with yellow caution tape (or a similar type of tape or ribbon).
- Visitors will be assigned to a specific BLM representative and must stay with that person at all times.
- Visitors are NOT permitted to walk around the gather site or temporary holding facility unaccompanied by their BLM representative.
- Observers are prohibited from climbing/trespassing onto or in the trucks, equipment or corrals, which is the private property of the contractor.
- When BLM is using a helicopter or other heavy equipment in close proximity to a designated observation area, members of the public may be asked to stay by their vehicle for some time before being directed to an observation area once the use of the helicopter or the heavy machinery is complete.
- When given the signal that the helicopter is close to the gather site bringing horses in, visitors must sit down in areas specified by BLM representatives and must not move or talk as the horses are guided into the corral.
- Individuals attempting to move outside a designated observation area will be requested to move back to the designated area or to leave the site. Failure to do so may result in citation or arrest. It is important to stay within the designated observation area to safely observe the wild horse gather.
- Observers will be polite, professional and respectful to BLM managers and staff and the contractor/employees. Visitors who do not cooperate and follow the rules will be escorted off the gather site by BLM law enforcement personnel, and will be prohibited from participating in any subsequent observation days.
- BLM reserves the right to alter these rules based on changes in circumstances that may pose a risk to health, public safety or the safety of wild horses (such as weather, lightening, wildfire, etc.).

Public Outreach and Education Day-Specific Protocol

A public outreach and education day provides a more structured mechanism for interested members of the public to see the wild horse gather activities at a given site. On this day, BLM attempts to allow the public to get an overall sense of the gather process and has available staff who can answer questions that the public may have. The public rendezvous at a designated place and are escorted by BLM representatives to and from the gather site.

APPENDIX D

BLM IM Number 2010-164

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
<http://www.blm.gov>

July 22, 2010

In Reply Refer To:
4710 (260) P

EMS TRNASMISSION 07/23/2010
Instruction Memorandum No. 2010-164
Expires: 09/30/2011

To: All Field Officials (except Alaska)
From: Assistant Director, Renewable Resources and Planning
Subject: Public Observation of Wild Horse and Burro Gatherers

Program Area: Wild Horse and Burro Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy for public observation of wild horse and burro (WH&B) gathers.

Policy/Action: The Bureau of Land Management's (BLM's) policy is to accommodate public requests to observe a gather primarily through advance appointment, on days and at times scheduled by the authorized officer. Planning for one public observation day per week is suggested.

Specific viewing opportunities will be based on the availability of staff with the necessary expertise to safely and effectively host visitors, as well as other gather-specific considerations (e.g., weather, terrain, road access, landownership). The public should be advised that observation days are tentative and may change due to unforeseen circumstances (e.g., weather, wildfire, trap relocation, equipment repair, etc.). To ensure safety, the number of people allowed per observation day will be determined by the District Manager (DM) and/or Field Office Manager (FM) in consultation with the Contracting Officer's Representative/WH&B Specialist (COR) for the gather.

The DM/FM has the primary responsibility for effectively planning and managing public observation of the gather operation. Advance planning will:

- Ensure that the public have opportunities to safely observe wild horse gathers;
- Minimize the potential for disruption of the gather's execution;
- Maximize the safety of the animals, visitors, and the BLM and contractor personnel;
- Provide for successful management of visitors; and
- Ensure preparedness in the event of unanticipated situations.

The authorized officer will consider the following when planning for public observation of WH&B gather operations. Also see Attachment 1 (Best Practices When Planning for Public Observation at Gatherers).

A. Safety Requirements

During WH&B gathers, the safety of the animals, the BLM and contractor personnel, and the public is of paramount importance. Because of the inherent risk involved in working with WH&B, the public will not be allowed inside corrals or pens or be in direct contact with the animals. Viewing opportunities during the gather operation must always be maintained at a safe distance (e.g., when animals are being herded into or worked at the trap or temporary holding facility, including sorting, loading) to assure the safety of the animals, the BLM and contractor personnel, and the public.

Unless an emergency situation exists, the BLM's policy prohibits the transportation of members of the public in Government or Contractor-owned or leased vehicles or equipment. Therefore, observers are responsible for providing their own transportation to and from the gather site and assume all liability for such transportation.

The helicopter/aircraft is the private property of the gather contractor. Due to liability and safety concerns, Bureau policy prohibits observers from riding in or mounting cameras onto the aircraft. Should observers create unsafe flying and gathering conditions, for example, by hiring an aircraft to film or view a gather, the COR, in consultation with the gather contractor, will immediately cease gather operations.

The COR has the authority to stop the gather operation when the public engage in behavior that has the potential to result in harm or injury to the animals, employees, or other members of the public.

B. Planning for Public Observation at WH&B Gathers

During advance planning for public observation at WH&B gathers, the authorized officer should consult with the State External Affairs Chief or appropriate Public Affairs office. An internal communications plan will be developed for every gather (Attachment 2). It may also be helpful to prepare answers to frequently asked questions (Attachment 3).

C. Law Enforcement Plan

A separate Law Enforcement Plan should be developed if the need for law enforcement support is anticipated. The Law Enforcement Plan must be approved in advance by the Special Agent-In-Charge (SAC) or the State Staff Ranger of the State in which the gather is occurring.

D. Temporary Closure to Public Access

Under the authority of section 303(a) of the Federal Land Management and Policy Act (43 U.S.C. 1733(a)), 43 CFR 8360.0-7, and 43 CFR 8364.1, the authorized officer may temporarily close public lands within all or a portion of the proposed gather area to public access when necessary to protect the health and safety of the animals, the public, contractors and employees. Completion of a site-specific environmental analysis of the environmental impacts associated with the proposed closure and publication of a Federal Register Notice is required.

E. Gather Contract Pre-Work Conference

- Talk to the contractor about how many members of the public are expected and when. Discuss, and reach mutual agreement, about where best to position the public at the individual trap-sites to allow the gather to be observed, while accomplishing the gather objectives and assuring the humane treatment of the animals and the safety of the BLM and contractor personnel, and public.
- No deviation from the selected viewing location(s) should be made, unless the gather operation is being adversely impacted. The COR will consult with the gather contractor prior to making any changes in the selected viewing locations.
- The BLM's policy prohibits it from ferrying observers in the helicopter or any other mode of conveyance unless an emergency situation exists. Review this policy with the contractor during the pre-work conference.

F. Radio Communication

- Assure there is effective radio communication between law enforcement personnel, gather COR or project inspectors (PIs), and other BLM staff.
- Identify the radio frequencies to be used.
- Communication with the gather contractor is through the BLM COR or PI, and from the gather contractor to the helicopter pilot. Direct communication between BLM personnel (other than the COR) and the helicopter pilot is not permitted, unless agreed upon by the BLM authorized officer and the contractor in advance, or the pilot is requesting information from the COR.

G. Pre- and Post-Action Gather Briefings

- Pre-briefings conducted by knowledgeable and experienced BLM staff can be helpful to the public.
- The pre-gather briefing is an opportunity to explain what individuals will see, why the BLM is conducting the gather, how the animals will be handled, etc.
- Post-action briefings may also be helpful in interpreting and explaining what individuals saw, what happened, why certain actions were taken, etc.

H. Summary of Individual Roles and Responsibilities

1. District and/or Field Office Managers

DMs and/or FM's are responsible for keeping the State Director and State WH&B Lead fully informed about the gather operation. Included is working with State/local public affairs staff to prepare early alerts if needed. An additional responsibility is determining if a law enforcement presence is needed.

2. Public Affairs Staff

The local district/field office public affairs staff is responsible for working with the COR, DM/FM, other appropriate staff, the State WH&B Program Lead, and the State Office of Communications to implement the communications strategy regarding the gather.

3. Law Enforcement

Develop and execute the law enforcement plan in consultation with District/Field Office Managers, the COR/PI, and the State's Special Agent-In-Charge or State Staff Ranger.

4. Contracting Officer's Representative (COR)/Project Inspectors (PIs)

The COR and the PI's primary responsibility is to administer the contract and manage the gather. A key element of this responsibility is to assure the safe and humane handling of WH&B. The COR is also responsible for working closely with the DM/FM and Public Affairs Staff to develop the communication plan, and for maintaining a line of communication with State, District, and Field Office managers, staff and specialists on the progress of, and any issues related to, the gather operation.

Timeframe: This instruction memorandum is effective immediately.

Budget Impact: Higher labor costs will be incurred while accommodating increased interest from the public to attend gather events. The budget impacts of unanticipated situations which can occur during WH&B gathers include substantial unplanned overtime and per diem expense. Through advance planning, necessary support staff can be identified (e.g., law enforcement, public affairs, or other BLM staff) and the cost-effectiveness of various options for providing staff support can be evaluated. In situations where public interest in a gather operation is greater than anticipated, the affected state should coordinate with the national program office and headquarters for assistance with personnel and funding.

Background: Heightened interest from the public to observe WH&B gathers has occurred. Advance planning for public observation of gather operations can minimize the potential for unanticipated situations to occur during WH&B gathers and assure the safety of the animals, the BLM and contractor personnel, and the public.

Manual/Handbook Sections Affected: No change or affect to the BLM manuals or handbooks is required.

Coordination: This IM was coordinated among WO-200 and WO-260 staff, State WH&B Program Leads, field WH&B Specialists, public affairs, and law enforcement staff in the field.

Contact: Questions concerning this policy should be directed to Susie Stokke in the Washington Office at (202) 912-7262 or Lili Thomas in the National Program Office at (775) 861-6457.

Signed by:
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Renewable Resources and Planning

Authenticated by:
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APPENDIX E

Appendix E: Federal Aviation Administration General Operating and Flight Rules Sec. 91.119

Part 91 GENERAL OPERATING AND FLIGHT RULES

Subpart B--Flight Rules General

Sec. 91.119

Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

[(d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and

(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.]

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